

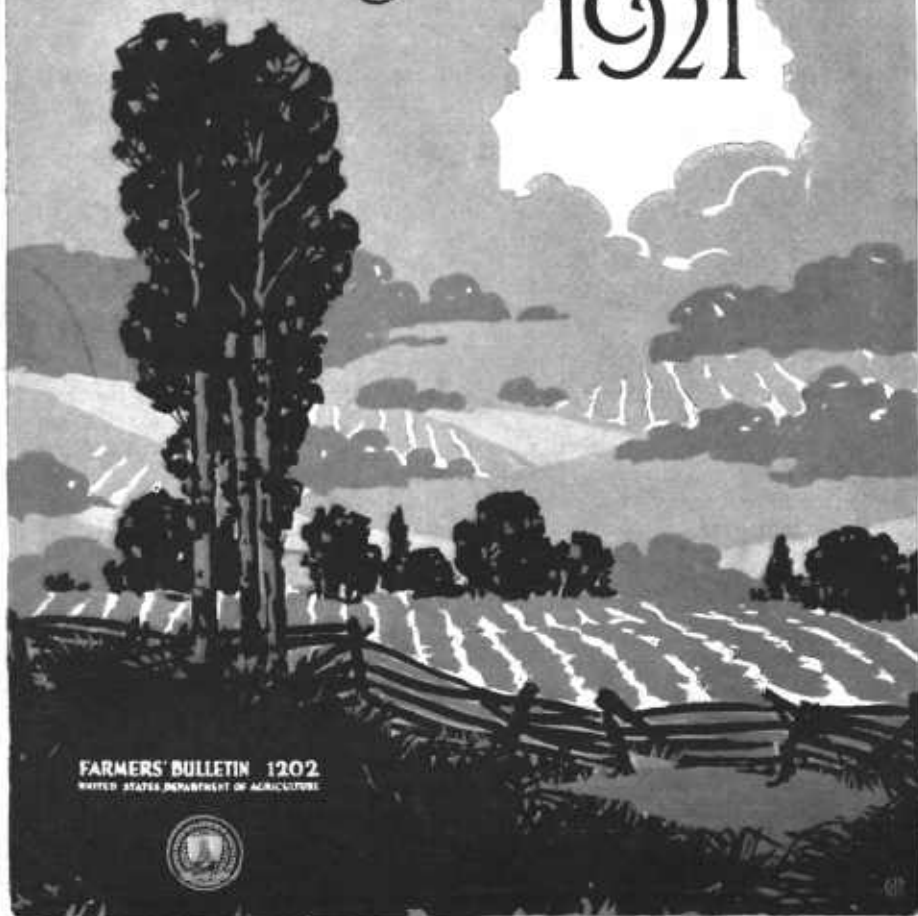
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AN AGRICULTURAL ALMANAC

for

1921



FARMERS' BULLETIN 1202
UNITED STATES DEPARTMENT OF AGRICULTURE



Concerning Almanacs.

ALMANACS have been in use for many years, the earliest European ones being guides to church days. Manuscript almanacs that date back to the twelfth century are still in existence; indeed, among Egyptian records in the British Museum is a fragment of an almanac about 3,000 years old.

The word "almanac" is of disputed origin, but is said to come from Arabic words signifying "to reckon."

Probably the first almanac to use the "Man of the Signs" with the zodiac emblems, supposed to govern the human system, was issued about 1300. No popular almanac seems to be complete without them. A humorous almanac, known as Poor Robin, published in England in 1664, first ridiculed the science of astrology, and was a forerunner of that description by Josh Billings of "an American brave in his grate tragick akt ov being attacked bi the twelve constellashuns."

The earliest known printed European almanac appeared between the years 1450 and 1461. The earliest almanac printed in England was the Kalendar of Sheparden, a translation from the French, printed about 1497.

The very first book issued from a press set up at Harvard College in 1639 was "An Almanack calculated for New England by Mr. Pierce, Mariner." No copies are known to exist. In colonial days almanacs were compiled by men of learning, and printers looked upon them as sources of profit. An American almanac which borrowed the English title "Poor Robin" was compiled in 1728 by James Franklin, elder brother of Benjamin. The first copy of Poor Richard was issued in 1733 by Benjamin Franklin, writing as Richard Saunders. This ran for 25 years and owed its popularity to its scraps of thrifty wisdom. It was translated into nearly every important language.

Many almanacs have been published by vendors of patent medicines, and even these have at least partially merited the sentence of "most despised, most prolific, and most indispensable of books."

This Agricultural Almanac, the first issued by the United States Department of Agriculture, is not the first almanac to be printed by the Government. The most notable is the American Ephemeris and Nautical Almanac, published by the Naval Observatory at Washington. It is issued several years in advance of the time to which it refers, and is of benefit to navigators embarking on long voyages. Its astronomical details of the positions of the heavenly bodies, which can be exactly predicted, should not be confused with the long-distance weather forecasts in the pages of almanacs issued to advertise pills and potions. The scientific forecasts of the Weather Bureau are never issued for more than a few days in advance and are based upon exact telegraphic reports and weather maps.

Eclipses in 1921.

In the year 1921 there will be two eclipses of the sun and two of the moon.

1. Annular eclipse of the sun April 7, not visible in the United States.

2. Total eclipse of the moon April 21, visible generally in the United States.

3. Total eclipse of the sun September 30-October 1, not visible in the United States.

4. Partial eclipse of the moon October 16, the ending visible in the United States, except in the extreme western part.

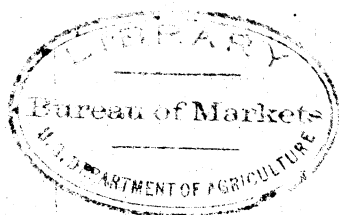
Further details of the visible eclipses are given on the calendar pages of the months in which they occur, and so also are the dates of the beginnings of the seasons.

An Agricultural Almanac

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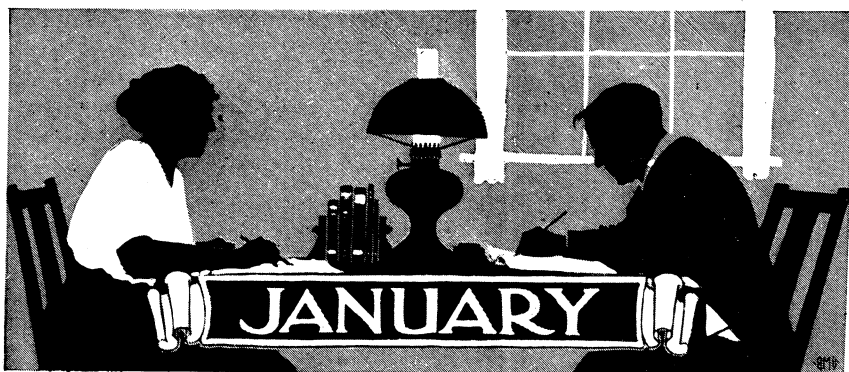
Compiled by Bristow Adams from sources
within the United States Department of
Agriculture for the use of Farmers
Gardeners, Householders
and others



Farmers' Bulletin 1202

Published by the United States Department of Agriculture

**Printed at the Government Printing Office
Washington, D. C.**



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.			
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)					
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Sow.	Ewe.	Cow.	Mare.
1	Sa	<i>h. m.</i> 6 56	<i>h. m.</i> 5 11	<i>h. m.</i> 7 8	<i>h. m.</i> 4 59	<i>h. m.</i> 7 22	<i>h. m.</i> 4 45	<i>h. m.</i> 7 38	<i>h. m.</i> 4 29	Apr. 25	May 31	Oct. 8	Dec. 7
2	S	6 56	5 12	7 8	5 0	7 22	4 46	7 39	4 30	26	June 1	9	8
3	M	6 56	5 13	7 8	5 1	7 22	4 47	7 39	4 31	27	2	10	9
4	Tu	6 57	5 13	7 9	5 1	7 22	4 48	7 38	4 32	28	3	11	10
5	W	6 57	5 14	7 9	5 2	7 22	4 49	7 38	4 33	29	4	12	11
6	Th	6 57	5 15	7 9	5 3	7 22	4 50	7 38	4 34	30	5	13	12
7	Fr	6 57	5 16	7 9	5 4	7 22	4 50	7 38	4 35	May 1	6	14	13
8	Sa	6 57	5 16	7 9	5 5	7 22	4 51	7 38	4 36	2	7	15	14
9	S	6 57	5 17	7 9	5 6	7 22	4 52	7 38	4 37	3	8	16	15
10	M	6 57	5 18	7 9	5 7	7 22	4 54	7 37	4 38	4	9	17	16
11	Tu	6 57	5 19	7 9	5 8	7 22	4 55	7 37	4 39	5	10	18	17
12	W	6 57	5 20	7 9	5 8	7 22	4 56	7 37	4 40	6	11	19	18
13	Th	6 57	5 20	7 8	5 9	7 21	4 57	7 36	4 42	7	12	20	19
14	Fr	6 57	5 21	7 8	5 10	7 21	4 58	7 36	4 43	8	13	21	20
15	Sa	6 57	5 22	7 8	5 11	7 20	4 59	7 35	4 44	9	14	22	21
16	S	6 57	5 23	7 8	5 12	7 20	5 0	7 35	4 45	10	15	23	22
17	M	6 57	5 24	7 8	5 13	7 20	5 1	7 34	4 46	11	16	24	23
18	Tu	6 56	5 25	7 7	5 14	7 19	5 2	7 34	4 48	12	17	25	24
19	W	6 56	5 26	7 7	5 15	7 19	5 3	7 33	4 49	13	18	26	25
20	Th	6 56	5 26	7 6	5 16	7 18	5 4	7 32	4 50	14	19	27	26
21	Fr	6 56	5 27	7 6	5 17	7 18	5 6	7 31	4 52	15	20	28	27
22	Sa	6 55	5 28	7 6	5 18	7 17	5 7	7 31	4 53	16	21	29	28
23	S	6 55	5 29	7 5	5 19	7 16	5 8	7 30	4 55	17	22	30	29
24	M	6 55	5 30	7 4	5 20	7 16	5 9	7 29	4 56	18	23	31	30
25	Tu	6 54	5 31	7 4	5 21	7 15	5 10	7 28	4 57	19	24		31
26	W	6 54	5 32	7 4	5 22	7 14	5 12	7 27	4 59	20	25	Nov. 1	
27	Th	6 53	5 33	7 3	5 23	7 14	5 13	7 26	5 0	21	26	2	Jan. 1
28	Fr	6 53	5 34	7 2	5 24	7 13	5 14	7 25	5 2	22	27	3	2
29	Sa	6 52	5 34	7 2	5 25	7 12	5 15	7 24	5 3	23	28	4	3
30	S	6 52	5 35	7 1	5 26	7 11	5 16	7 23	5 4	24	29	5	4
31	M	6 51	5 36	7 0	5 27	7 10	5 17	7 22	5 6	25	30	6	5

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Phases of the Moon, Seventy-Fifth Meridian Time.

New moon, 9th, 12.27 a. m.; first quarter, 17th, 1.31 a. m.; full moon, 23d, 6.08 p. m.; last quarter, 30th, 3.02 p. m.

"January warm, the Lord have mercy."

January.



S JANUARY is the month to plan the work for the year, records for farm and household activities should be started now; take a systematic look ahead. Other things being equal, plans help to make the same amount of work more effective. Don't add to the risks the weather makes you take, by failure to look ahead and make plans.

When icicles hang by the wall,
And Dick the shepherd blows his nail,
And Tom bears logs into the hall,
And milk comes frozen home in pail.

—Shakespeare.

January Weather.

January, as a rule, is the coldest month of the year. The lowest temperatures usually occur in the north-central border States, where the average for the month is near zero. Throughout the interior of the country the month is characterized by frequent and abrupt temperature changes; very low temperatures are sometimes experienced in the northern interior districts, where from 40° to 50° below zero, or lower, have been recorded. Freezing temperatures are infrequent in extreme southern Florida and along the southern California coast.

Precipitation in January is light throughout the Plains States, and falls mostly in the form of snow. In the Pacific Coast States the rainy season is at its height, and the northern portions usually receive more precipitation than any other section of the country, with heavy snows in the mountains. More than 20 feet of snow occurs in this month at points in the California mountains. Usually the snowfall is heavy from the Lake region eastward, and the average for the month is as much as 30 inches in some places. Much cloudy weather prevails during the month in the Lake region and the North Pacific States, but in the far Southwest the month is sunny.

Plans.

Keeping farm accounts never worried Adam; but he was only a gardener. Keep records of all operations, such as production, expenditures, and labor costs.

Only in this way can you tell when you are operating at loss or profit. Ask the county agent to get you a farm account book. Make a farm inventory and begin to study your farm business.

Plan to test seeds to be planted during the spring.

Plan the coming year's garden work now; do not wait until planting time.

For the land's sake grow clover. Use good seed; you can't always get good seed at the last minute. Clover seed usually advances in price toward planting time. Get samples from several dealers and have them tested. Or see your county agent.

Plan to feed the boll weevils some calcium arsenate next summer. Do the job right or not at all. Ask the department about the right way.

The merchant buys straw hats in dead of winter. Prepare for that garden now. Order seeds. A well-planned, well-tilled garden plot can be made to supply more food than a similar area devoted to any single food crop.

Keep your name off the "Sucker list." Don't pay fabulous prices for seed of extravagantly advertised grain varieties. Many of them are old ones under new names. More of them are not as good as those you have now. Let your State experiment station try the novelties first.

Fruit.

This is the time to estimate spray material requirements and place orders.

Live Stock.

Feed the dairy cow to-day and she will pay you for it tomorrow.

Best winter feeding gives a cow all the clover or alfalfa hay she will eat, plenty

of roots or silage, and 1 pound of grain feed for every 3 to 4 pounds of milk she produces.

Well-ventilated barns help to keep live stock healthy; do not close up barns tightly.

The world's best cow has a record of more than 33,000 pounds of milk in a year, and many cows have produced over 25,000 pounds. How does your herd compare? Keep milk and butterfat records and you can tell how good your stock is and whether it is improving. Begin now.

Sows should be in good condition and gaining slightly in weight when breeding season begins. Bred sows should take exercise every day to stay in condition and impart strength and vigor to their litters. Careful feeding with complete rations is necessary.

Breeding ewes need exercise every day. Rams should be kept out of the ewe flock. Keep the ewes gaining a little by careful, economical, and well-balanced feeding.

Poultry.

For breeders, select strong, active, alert fowls with no signs of sickness. Do not breed from sluggish, sickly looking, weak birds with knock-knees, pale, sunken eyes, and long, snaky, or crow heads.

Be sure that the birds are sufficiently fed on a well-balanced but not too fattening ration, and thus have the breeders in good condition and also secure the necessary eggs. Provide a dry mash in a hopper where the hens can help themselves.

Farm Operations.

Haul and spread manure and plow if weather and soil permit. (Mountain and Intermountain States.)

Plan your spray irrigation system if you wish to use it on this season's crop. Place the order for your pump and motor if you can not connect with city water. Tell the pump and power man that the outfit must pump $7\frac{1}{2}$ gallons a minute for each acre against a total head of 150 feet

if you want a first-class system. If you want to irrigate 2 acres you should have $2 \times 7\frac{1}{2} = 15$ gallons a minute, and if 5 acres $5 \times 7\frac{1}{2} = 37\frac{1}{2}$ gallons a minute, always to be pumped against 150 feet of head.

Get maple sugar and sirup equipment ready for use.

Overhaul and begin repairing farm machinery. (See Farmers' Bulletins 946, 947, 1036.)

Get all sugar-beet implements in good working condition.

For plans of ice houses and directions for harvesting and storing ice consult Farmers' Bulletin 1078.

Produce and Marketing.

Hog receipts at markets in January are usually the heaviest in the year.

Bureau of Crop Estimates reports stocks of potatoes held by farmers and dealers January 1; also estimates gross value of farm products and farm prices of agricultural products, December 15 and January 1. Reports are made also of foreign crop statistics.

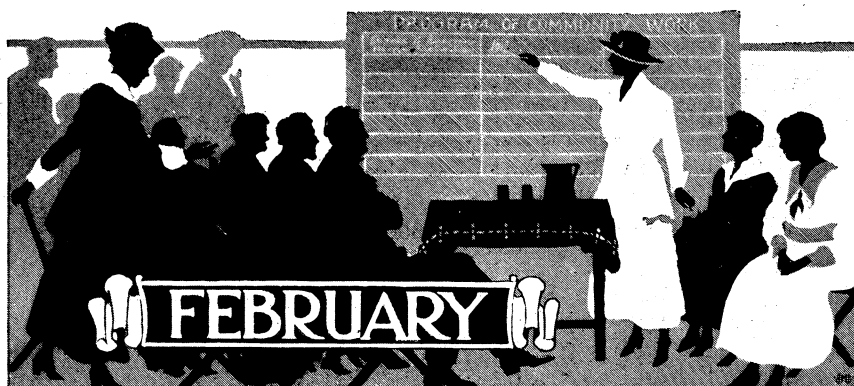
Woods Work.

If you have timber to sell, estimate it now. A careful estimate of the piece of woods which you wish to sell may enable you to get for it a tidy sum above that first offered. Farm woods have paid off many a mortgage. It is best to fell timber during the fall or winter months; it seasons better. There will also be a more healthy and vigorous growth of sprouts from hardwood stumps. Sprout growth is better if an ax rather than a saw is used to fell the trees.

Wild Life.

January is a good time to harvest your crop of fur-bearing animals. See Year-book Separate 823; Circular 135; and the annual bulletin of Laws Relating to Fur-Bearing Animals.

Feed the birds; they need your help. Next spring and summer they will repay you by destroying insect pests. Read Farmers' Bulletins 621, 760, 844, 912.



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.											
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)													
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.												
1	Tu	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	May 26	July 1	Nov. 8	Jan. 7								
2	W	6 51	5 37	7 0	5 28	7 9	5 19	7 21	5 7					27	2	9	8				
3	Th	6 50	5 38	6 59	5 29	7 8	5 20	7 20	5 9					28	3	10	9				
4	Fr	6 50	5 38	6 58	5 30	7 7	5 21	7 18	5 10					29	4	11	10				
5	Sa	6 49	5 39	6 57	5 31	7 6	5 22	7 17	5 12					30	5	12	11				
6	S	6 48	5 40	6 56	5 32	7 5	5 23	7 16	5 13	June 31	6	13	12								
7	M	6 47	5 42	6 55	5 34	7 4	5 25	7 15	5 14					1	7	14	13				
8	Tu	6 46	5 43	6 54	5 35	7 3	5 26	7 13	5 16					2	8	15	14				
9	W	6 46	5 44	6 53	5 36	7 2	5 27	7 12	5 17					3	9	16	15				
10	Th	6 45	5 44	6 52	5 37	7 1	5 28	7 11	5 19					4	10	17	16				
11	Fr	6 45	5 45	6 51	5 38	7 0	5 29	7 9	5 20	5	11	18	17								
12	Sa	6 44	5 45	6 51	5 38	6 59	5 31	7 8	5 22					6	12	19	18				
13	S	6 43	5 46	6 50	5 39	6 58	5 32	7 6	5 23					7	13	20	19				
14	M	6 42	5 47	6 49	5 40	6 56	5 33	7 5	5 24					8	14	21	20				
15	Tu	6 42	5 48	6 48	5 41	6 55	5 34	7 4	5 26					9	15	22	21				
16	W	6 41	5 48	6 47	5 42	6 54	5 35	7 2	5 27	10	16	23	22								
17	Th	6 40	5 49	6 46	5 43	6 53	5 36	7 1	5 29					11	17	24	23				
18	Fr	6 39	5 50	6 45	5 44	6 51	5 38	6 59	5 30					12	18	25	24				
19	Sa	6 38	5 51	6 44	5 45	6 50	5 39	6 57	5 31					13	19	26	25				
20	S	6 37	5 51	6 42	5 46	6 49	5 40	6 56	5 33					14	20	27	26				
21	M	6 36	5 52	6 41	5 47	6 47	5 41	6 54	5 34	15	21	28	27								
22	Tu	6 35	5 53	6 40	5 48	6 46	5 42	6 53	5 36	16	22	29	28								
23	W	6 34	5 54	6 39	5 49	6 44	5 43	6 51	5 37	17	23	30	29								
24	Th	6 33	5 54	6 38	5 50	6 43	5 45	6 49	5 38	18	24	Dec. 1	30								
25	Fr	6 32	5 55	6 37	5 51	6 42	5 46	6 48	5 40	19	25	2	31								
26	Sa	6 31	5 56	6 35	5 52	6 40	5 47	6 46	5 41					20	26	Feb. 1	31				
27	S	6 30	5 57	6 34	5 53	6 39	5 48	6 44	5 43					21	27	4	2				
28	M	6 29	5 57	6 33	5 53	6 37	5 49	6 43	5 44									22	28	5	3
29	Tu	6 28	5 58	6 32	5 54	6 36	5 50	6 41	5 45									22	28	5	3
30	W	6 27	5 59	6 31	5 55	6 35	5 51	6 40	5 46	23	29	6	4								
31	Th	6 26	5 59	6 30	5 56	6 34	5 52	6 39	5 47												

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Phases of the Moon, Seventy-fifth Meridian Time.

New moon, 7th, 7.37 p. m.; first quarter, 15th, 1.53 p. m.; full moon, 22d, 4.32 a. m.

**"If February gives much snow
A fine summer it doth foreshow."**

February.



UT IN, in February, the year's stock of seed and supplies. Buy with economy based on quality, from reliable dealers. Also lay in a supply of ideas. Take the family and go to farmers' week at the State College; learn from the teachers and from other farmers. Attend extension schools and community meetings; keep up with the times.

Late February days; and now, at last, Might you have thought that winter's woe was past; So fair the sky was, and so soft the air. The happy birds were hurrying here and there, As something soon would happen.

—William Morris.

February Weather.

The average temperature for February is slightly warmer than that for January. As in January, cold waves frequently sweep down from the Canadian northwest and overspread all districts east of the Rockies. The coldest weather of the year, east of the Rocky Mountains, is likely to be during the first part of this month. A cold wave in February, 1899, carried the line of zero temperature to the central Gulf coast. The coldest February weather of record at a regular Weather Bureau station in the United States was 55° below zero, in Montana in 1887. Freezing temperatures, as a rule, need not be feared along the immediate Gulf coast after February 20.

The average precipitation does not differ materially from that of January. The rainy season continues on the Pacific coast, with heavy snows at higher elevations. There is a noticeable increase in thunderstorms in the Southern States.

Plans.

The brain used in February will save the back in July.

Read how other men have planned farm operations, in Farmers' Bulletins 81, 986, 1000, 1015, for the South; Department Bulletins 582, 716, for the North, and 705 for the West.

If you plan to rent a farm this spring send for Farmers' Bulletin 1164. Better

rent a big farm than buy a small one if your capital is limited. Size of business is a factor in farming.

A dead horse is final, but an idle horse eats on forever!

Study horse labor costs with Department Bulletin 560.

Take the slack out of slack days; profits made then are velvet.

Fruit.

Make lime-sulphur solution either by means of an iron kettle and fire or a steam boiler. See Farmers' Bulletin 908.

Control spring cankerworm by applying bands of sticky material or cotton batting to prevent moths from laying eggs up in the tree and the ascent of the caterpillars. If bands are not used, spray when first leaves are out with arsenate of lead.

Live Stock.

Build self-feeders, panels for portable fences, and other equipment to take care of the spring crop of live stock.

Prepare pens for sows which are soon to farrow. Have them in good repair, with pig rails in position, and whatever else is necessary to furnish dry, warm, and comfortable quarters.

For the ewes, a daily allowance of from one-half to three-quarters of a pound of grain to each, at least two or three weeks before lambing, will help to insure a good milk flow.

Poultry.

Overhaul the incubator; clean it, put a new wick in the lamp, and test the thermometer. Order any new parts needed.

Mate the breeding pens, if this has not already been done, with 1 male to 12 or 15 females of the egg breeds such as the Leghorn, or to 10 or 12 females of the general-purpose breeds such as the Plymouth Rock, and give the breeders range outdoors whenever the weather permits.

Eggs for hatching can be saved after the birds have been mated two weeks. Set eggs by the middle of the month. Early hatched pullets produce fall and winter eggs. Use care in selecting eggs for hatching. Each hen in her pullet year should produce at least 10 dozen eggs.

Have you ever tried trapnesting your poultry flock to determine the best layers? See Farmers' Bulletin 682.

Get the brooder in readiness for the early hatches.

Farm Operations.

Repair and oil harnesses, have plows sharpened, order new machinery, put in tile drains during spring.

If your ice house is not full already, watch sharply for a chance to fill it now.

High time clover seed is ready for sowing. Seeding may begin this month. Scarified sweet clover seed is best. See that the drill is in good order.

Crimson clover may be pastured in the South Atlantic States.

Plow down manure crops in southwestern United States.

Get ready for maple-sugar making. Gather up the downwood. Clean all utensils; absolute cleanliness is the watchword. Tap maple trees if freezing and thawing weather prevails. (North Central States.)

Break ground early for spring planting of feed crops, if you have the space available. It costs less to raise hay than to buy it. Plan to have enough land for silage crops. Corn is best, but here are some others: Sorghum, sudan grass, oats and peas, wheat and vetch, sunflowers, beet tops, sweet clover.

Barley is a cool-weather plant. Sow it early. If sown after other small grains, maximum yields can not be expected. Farmers' Bulletin 968.

Clean all seed grain before sowing. Fanning and grading remove most of the weed seeds and trash, as well as the light, shriveled, and diseased kernels. Grain which has been cleaned runs through the drill more evenly and produces a better and more uniform stand.

Barnyard manure applied before planting a small grain crop is likely to cause lodging. It is much safer to put the manure on grass or corn land.

Produce and Marketing.

Bureau of Crop Estimates reports on number and value of live stock, general live-stock statistics, including monthly farm prices for live stock for a series of years.

Woods Work.

Firewood cut this month will be well seasoned by next fall. In hauling it the horses will be earning their board, and the cutting can improve the woods. Farmers' Bulletin 1023 tells about machinery used.

Fires should be guarded against from now until the woods are green.

Cutting cordwood the right way helps to improve the woodland. First, take out dead trees, either standing or down, because if left they may become a breeding place for insects which attack live trees. Crooked trees interfere with the growth of straight trees; these and diseased, fire-damaged, or bug-infested trees should go. Poor trees may crowd out more valuable kinds of less rapid growth, and should be removed to give the better ones a chance. If the woods are too thick all growth becomes stagnated; therefore, as with a garden, a portion should be weeded out. Follow these practices, and after a few years the best trees will be left, and the woods will be far more valuable than with indiscriminate cutting.

Wild Life.

The ground hog, also known as wood-chuck and marmot, is supposed to come out of his burrow, look for his shadow, and then decide whether to go back for six more weeks of winter. Farmers' Bulletin 932 classes him as a "rodent pest." The best type of *ground hog* is sausage.

Prairie dogs and ground squirrels, after sleeping all winter, will soon be coming out of their burrows to feed upon planted seed and growing grain. Concerted community action is necessary to combat them. Get in touch with neighbors and county agent and arrange for a thorough poisoning campaign. See Farmers' Bulletin 932, Rodent Pests of the Farm. (West of the Mississippi.)

February Days.

2. Ground-hog day; information about his habits in Farmers' Bulletin 932.
3. *Land needs clover; clover needs lime. Have you got the lime?*
4. *Is the harness all repaired for the spring work?*

8. Kansas Experiment Station organized under Hatch Act, 1888.
9. Congress raised Government agricultural work to status of Cabinet department, 1889.
11. Norman J. Colman appointed first Secretary of Agriculture, 1889.
12. Lincoln's Birthday. Act for establishing first agricultural college in United States approved by Legislature of Michigan, 1855.
13. *Remember your friends, the birds; suet and seeds help them keep warm.*
14. St. Valentine's Day.
16. *Good lighting in the home means less work, more comfort, better health.*
17. Iowa Agricultural Experiment Station organized under Hatch Act, 1888.
19. First "weather probabilities" published by United States Signal Service, 1871.
22. Washington's Birthday.
23. Smith-Hughes Act, for promoting vocational agricultural education, approved, 1917.
28. *Is the brooder ready for early hatches?*

Farm Business Reminders.**Breeding Dates, Payments, Meetings, Etc.**



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.			
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)					
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.				
1	Tu	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	June 23	July 29	Dec. 6	Feb. 4
2	W	6 27	5 59	6 30	5 55	6 34	5 51	6 39	5 47				
3	Th	6 26	6 0	6 29	5 56	6 33	5 52	6 37	5 48	24	30	7	5
4	Fr	6 25	6 0	6 28	5 57	6 32	5 53	6 36	5 49	25	31	8	6
5	Sa	6 23	6 1	6 27	5 58	6 30	5 55	6 34	5 51	26	Aug. 1	9	7
6		6 22	6 2	6 25	5 59	6 28	5 56	6 32	5 52	27	2	10	8
7	S	6 21	6 2	6 24	6 0	6 27	5 57	6 30	5 53	28	3	11	9
8	M	6 20	6 3	6 22	6 0	6 25	5 58	6 28	5 55	29	4	12	10
9	Tu	6 19	6 4	6 21	6 1	6 24	5 59	6 27	5 56	30	5	13	11
10	W	6 18	6 4	6 20	6 2	6 22	6 0	6 25	5 57	July 1	6	14	12
11	Th	6 17	6 5	6 19	6 3	6 21	6 1	6 23	5 59	2	7	15	13
12	Fr	6 16	6 5	6 17	6 4	6 19	6 2	6 21	6 0	3	8	16	14
13	Sa	6 14	6 6	6 16	6 5	6 18	6 3	6 19	6 1	4	9	17	15
14	S	6 13	6 7	6 14	6 5	6 16	6 4	6 18	6 3	5	10	18	16
15	M	6 12	6 7	6 13	6 6	6 14	6 5	6 16	6 4	6	11	19	17
16	Tu	6 11	6 8	6 12	6 7	6 13	6 6	6 14	6 5	7	12	20	18
17	W	6 10	6 9	6 10	6 8	6 11	6 7	6 12	6 6	8	13	21	19
18	Th	6 8	6 9	6 9	6 9	6 10	6 8	6 10	6 8	9	14	22	20
19	Fr	6 7	6 10	6 8	6 10	6 8	6 9	6 8	6 9	10	15	23	21
20	Sa	6 6	6 10	6 6	6 10	6 6	6 10	6 6	6 10	11	16	24	22
20*		6 5	6 11	6 5	6 11	6 5	6 11	6 4	6 12	12	17	25	23
21	S	6 4	6 12	6 3	6 12	6 3	6 12	6 3	6 13	13	18	26	24
22	M	6 2	6 13	6 2	6 13	6 1	6 13	6 1	6 14	14	19	27	25
23	Tu	6 1	6 13	6 0	6 14	6 0	6 14	5 59	6 16	15	20	28	26
24	Th	6 0	6 14	5 59	6 14	5 58	6 16	5 57	6 17	16	21	29	27
25	Fr	5 59	6 14	5 58	6 15	5 57	6 16	5 55	6 18	17	22	30	28
26	Sa	5 57	6 15	5 56	6 16	5 55	6 18	5 53	6 19	18	23	31	29
27	S	5 56	6 15	5 55	6 17	5 53	6 18	5 51	6 21	19	24	Jan. 1	2
28	M	5 55	6 16	5 54	6 18	5 52	6 20	5 50	6 22	20	25	2	3
29	Tu	5 54	6 17	5 52	6 18	5 50	6 20	5 48	6 23	21	26	3	4
30	W	5 53	6 17	5 51	6 19	5 48	6 22	5 46	6 24	22	27	4	5
31	Th	5 51	6 18	5 49	6 20	5 47	6 22	5 44	6 26	23	28	5	6

Local mean solar time of sunrise and sunset (sun's upper limb), meridian of Greenwich. To obtain the standard time at any station, increase the local time by the number of minutes the station is *west* of the standard meridian (longitude west of standard meridian expressed in minutes divided by 15), or decrease the local time by the number of minutes the station is *east* of the standard meridian. (From the American Ephemeris and Nautical Almanac.)

*Vernal equinox (spring commences).

Phases of the Moon, Seventy-fifth Meridian Time.

Last quarter, 1st, 9.03 a. m.; new moon, 9th, 1.09 p. m.; first quarter, 16th, 10.49 p. m.; full moon, 23d, 3.19 p. m.; last quarter, 31st, 4.13 a. m.

"March flowers make no summer bowers."

March.



THE GRASP of winter weakens, the voice of spring begins to call. MARCH starts the spring tide of preparations. Keep ahead of the tasks and push them lest they get behind and push you. New life needs care; new-born beasts and newly hatched poultry must have good quarters; nursery stock deserves a fair start.

Cometh March with wind and rain;
Cometh March with sun and shine;
Cometh March the bold again—
Weather sombre; weather fine.
—John Kendrick Bangs.

March Weather.

With the advent of spring there is usually a rapid warming-up in nearly all portions of the United States, although the increase in temperature during March is not pronounced along the Pacific coast. In the northern interior districts the increase in the average March temperature over February is about 15°. In the more northern States, there may still be extremely cold weather however, from 35° to 40° below zero having been recorded in North Dakota and Montana. After March 15, killing frost does not occur in the Gulf States, as a rule, except in the extreme northern portions.

In the Rocky Mountain region and the Plains States the average March precipitation is nearly double that of the preceding month, being from 1 to 2 inches. East of the Mississippi River, except in the more northern States, there is also a material increase in precipitation. Rather heavy rains continue in the Pacific coast region, with much snow in the mountains. Heavy snows are still frequent in interior New York, but in other eastern districts the snowfall is generally much less than in February.

Fruit.

To eradicate San Jose and other scale insects of deciduous fruit trees, spray with lime-sulphur any time the leaves are off except during freezing weather. To get apple aphids, too, this treatment

may be delayed until bud tips show green, three-eighths pint of 40 per cent nicotine sulphate being added to the spray. In large orchards it is difficult to finish this "delayed dormant" application in time, especially if ground is soft or weather is unfavorable.

Occasionally early migrating birds eat fruit buds to an undesirable extent. To prevent this spray with a hot emulsion of fish-oil soap.

Live Stock.

Give horses that have been idle most of the winter enough light work to prepare them for spring operations; this will help prevent sore shoulders.

Have an outfit on hand for treating milk fever. This disease may affect cows soon after calving, especially those which give a large milk yield. Farmers' Bulletin 206 describes the disease.

Furnish the young lambs some oats, bran, and cracked corn and choice clover or alfalfa hay in a creep, where they can feed unmolested by the old ewes.

Sows should be accustomed to the presence of an attendant about the pen; then help may be given at farrowing, without causing undue excitement and possible injury to young pigs.

In extreme cold weather a box or basket padded with soft clean bags or cloths, and warmed with a hot-water bottle or heated brick should be used for new-born pigs.

Give barns, hog pens, poultry houses, and yards a thorough cleaning. Disinfect them. Remove harboring places and you will have fewer pests to contend with later on in hot weather.

Poultry.

Dust sitting hens thoroughly with good lice powder several times during the hatch.

Toe punch the chicks as they hatch, with a mark distinctive for the year, so that their ages can be told in the following years.

Do not feed chicks for at least 36 hours after they hatch.

Farm Operations.

Clean out field ditches and tile outlets.

This is a good time to purchase cotton duck; dealers have their goods for the coming season, the rush has not yet begun, and there is a full stock to select from. Farmers' Bulletin 1157 tells how to buy the right kind.

Examine and repair terraces. See Farmers' Bulletin 997.

Sow hemp seed for fiber. (California.)

Plant sugar-beet roots for seed production if weather conditions permit. (Mountain and Intermountain States.)

Plant Dixie, Dixie-Triumph, and Dixie-Cook wilt-resistant cottons bred by the United States Department of Agriculture and reduce losses from wilt. Farmers' Bulletin 625.

Are you ready to poison the boll weevils? Have your county agent send a sample of your calcium arsenate to the Delta Laboratory, Tallulah, La., for free analysis to make sure it is satisfactory.

Eelworms make poor flour. Plant clean wheat seed on clean ground and control the eelworm disease. Farmers' Bulletin 1041 tells how.

Marketing.

Bureau of Crop Estimates issues a report relating to stocks of grain in farmers' hands, giving an estimate of the amount of wheat, corn, oats, and barley of the 1920 crop on farms on March 1, the proportion of each of these crops which

will be shipped out of the counties where grown, and the percentage of the 1920 corn crop of merchantable quality. A supplemental report gives comparative land values.

Lamb prices frequently reach the highest point this month.

Hog prices usually show sharp advance and sometimes reach highest point of the year.

This month contains several Jewish fast days. The meat trade in many large cities slumps as a result.

Woods Work.

Bark peels easily this month. Fence posts which are going to be treated with a preservative should be cut and peeled. Even cottonwood and black gum will last 10 years or more if treated with a good preservative.

This is also the month to cut and peel hemlock and chestnut oak for telephone poles and for bark. Stack the bark in a sheltered place, or preferably under a roof, and never unnecessarily expose it. Ship to nearest tannery or buyer.

Wild Life.

The chimney swift, commonly called also chimney "swallow," arrives late in March on the Gulf coast of the United States from its still undiscovered winter home in South America. It reaches the Northern States late in April.

The return of robins may be looked for in the Middle Northern States about the first of March. Their value to agriculture is shown in Farmers' Bulletin 630.

Look out for ground squirrels or prairie dogs and be prepared to get them early in the season. (West of the Mississippi.) Protect your crops and range grasses by poisoned grain prepared in accordance with methods devised by the Biological Survey. Each animal killed early in spring will benefit you as much as several killed later.

Teach boys and girls the vital points of early tillage and good tillage; have them collect, and study the life history of, your troublesome insects, and encourage them in club work.

1. First society for promoting agriculture organized in Philadelphia, 1785.
2. Massachusetts Agricultural Experiment station organized under Hatch Act, 1888.
3. Congress appropriated \$1,000 for Patent Office to obtain agricultural statistics, etc., beginning of the Department of Agriculture, 1839.
4. Inauguration Day. Enactment of first Federal law protecting migratory birds, 1913.
6. *Have the plows sharpened this week.*
7. Minnesota Agricultural Experiment Station organized, 1885.
8. Hato soy bean introduced in United States, 1915.

9. Sampson tangelo originated from
Dancey tangerine and grapefruit,
1887.
10. First bottle of certified milk de-
livered, 1893.
11. *When you overhaul the tractor look at
Farmers' Bulletin 1093.*
14. Patent issued to Eli Whitney for first
cotton gin by Thomas Jefferson,
1794.
15. Benedict Provost first successfully
used copper sulphate to prevent
stinking smut of wheat, 1887.
16. Second experiment station bill
(Adams Act) approved by Roose-
velt, 1906.
19. *Take a walk around the fences to plan
for needed repairs.*
20. First county agent began work in
Broome County, N. Y., 1911.
21. Illinois Agricultural Experiment Sta-
tion organized under Hatch Act,
1888.
22. *Manure saved is money saved; Farmers'
Bulletin 978 tells how.*
24. *Clean up and paint milk house or
dairy before the spring rush.*
25. Good Friday.
27. Easter Sunday.

Breeding Dates, Payments, Meetings, Etc.

APRIL



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.			
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)		Sow.	Ewe.	Cow.	Mare.
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.				
1	Fr	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	July 24	Aug. 29	Jan. 6	Mar. 7
2	Sa	5 50	6 18	5 48	6 21	5 45	6 24	5 42	6 27	25	30	7	8
3	S	5 48	6 20	5 45	6 22	5 42	6 26	5 38	6 29	26	31	8	9
4	M	5 47	6 20	5 44	6 23	5 40	6 26	5 36	6 31	27	Sept. 1	9	10
5	Tu	5 45	6 21	5 42	6 24	5 39	6 28	5 34	6 32	28	2	10	11
6	W	5 44	6 21	5 41	6 25	5 37	6 29	5 33	6 33	29	3	11	12
7	Th	5 43	6 22	5 40	6 25	5 36	6 30	5 31	6 34	30	4	12	13
8	Fr	5 42	6 23	5 38	6 26	5 34	6 31	5 29	6 36	31	5	13	14
9	Sa	5 41	6 23	5 37	6 27	5 32	6 32	5 27	6 37	Aug. 1	6	14	15
10	S	5 40	6 24	5 36	6 28	5 31	6 33	5 25	6 38	2	7	15	16
11	M	5 38	6 24	5 34	6 29	5 29	6 34	5 24	6 40	3	8	16	17
12	Tu	5 37	6 25	5 33	6 29	5 28	6 35	5 22	6 41	4	9	17	18
13	W	5 36	6 26	5 32	6 30	5 26	6 36	5 20	6 42	5	10	18	19
14	Th	5 35	6 26	5 30	6 31	5 25	6 37	5 18	6 43	6	11	19	20
15	Fr	5 34	6 27	5 29	6 32	5 23	6 38	5 16	6 45	7	12	20	21
16	Sa	5 33	6 27	5 28	6 33	5 22	6 39	5 15	6 46	8	13	21	22
17	S	5 32	6 28	5 26	6 33	5 20	6 40	5 13	6 47	9	14	22	23
18	M	5 31	6 29	5 25	6 34	5 19	6 41	5 11	6 48	10	15	23	24
19	Tu	5 30	6 29	5 24	6 35	5 17	6 42	5 10	6 50	11	16	24	25
20	W	5 29	6 30	5 23	6 36	5 16	6 43	5 8	6 51	12	17	25	26
21	Th	5 28	6 30	5 21	6 37	5 14	6 44	5 6	6 52	13	18	26	27
22	Fr	5 26	6 31	5 20	6 38	5 13	6 45	5 4	6 53	14	19	27	28
23	Sa	5 25	6 32	5 19	6 38	5 12	6 46	5 3	6 55	15	20	28	29
24	S	5 24	6 32	5 18	6 39	5 10	6 47	5 1	6 56	16	21	29	30
25	M	5 24	6 33	5 17	6 40	5 9	6 48	5 0	6 57	17	22	30	31
26	Tu	5 22	6 34	5 15	6 41	5 7	6 49	4 58	6 58	18	23	31	Apr. 1
27	W	5 21	6 34	5 14	6 42	5 6	6 50	4 56	7 00	19	24	Feb. 1	2
28	Th	5 20	6 35	5 13	6 42	5 5	6 51	4 55	7 01	20	25	2	3
29	Fr	5 20	6 36	5 12	6 43	5 3	6 52	4 53	7 02	21	26	3	4
30	Sa	5 19	6 36	5 11	6 44	5 2	6 53	4 52	7 03	22	27	4	5

Local mean solar time of sunrise and sunset (sun's upper limb), meridian of Greenwich. To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian (longitude west of standard meridian expressed in minutes divided by 15), or decrease the local time by the number of minutes the station is east of the standard meridian. (From the American Ephemeris and Nautical Almanac, 1921.)

Phases of the Moon, Seventy-fifth Meridian Time.

New moon, 8th, 4.05 a. m.; first quarter, 15th, 5.12 a. m.; full moon, 22d, 2.49 a. m.; last quarter, 29th, 11.09 p. m.

Total eclipse of the moon; eclipse begins 11.57 p. m., 21st; totality begins 2.24 a. m., 22d; totality ends 3.05 a. m., 22d; eclipse ends 5.32 a. m., 22d.

"A cold April the barn will fill."

April.



THE REAL beginnings come in April: "As ye sow, ye are like to reap." Best seeds and best breeds best serve the world's needs—and best repay the farmer. Don't forget beauty; plan for lawns and flowers. Risk some early plantings in the garden. The cost is not great and extra-early crops bring rewards. Work without ceasing.

Soon across the folding twilight
Of the round earth hushed to hear,
The first robin at his vespers
Calling far, serene, and clear.

—Bliss Carman.

April Weather.

The average spring increase in temperature is greater in April than in March, but occasionally there are cold periods, especially in northern districts; the coldest of record is slightly more than 10° below zero near the north-central border, and as far down as the east Gulf coast freezing temperatures are of record early in the month. As a rule, killing frosts are not experienced after April 15 south of a line extending through central Virginia, western North Carolina, and the southern portions of Kentucky, Missouri, and Kansas.

As spring advances, a pronounced increase in precipitation takes place throughout the Plains States and much of the Rocky Mountain area, but a marked decrease of rainfall on the Pacific slope. Thunderstorms become more frequent, especially in the lower Mississippi Valley.

Plans.

The thing that counts most is not crop acres but more profit to the acre; not more cows but more profit from each cow; not more hours of labor but better returns. Ask the county agent the most profitable farm practices and best systems of management.

Don't be fooled; beware of false prophets. Don't plant by the moon; but get the best seed and prepare the seed bed, then plant when soil and moisture conditions are right.

Be equipped in advance with all necessary remedies for insects that destroy crops in your territory. Use standard insecticides of the proper strength to avoid injuring the plants.

Fruit.

The plum curculio, a small snout beetle that deforms the fruit and causes much of it to drop, is best controlled by arsenate of lead, 1 pound of powder or 2 pounds of the paste to 50 gallons of water, applied during pink cluster-bud stage and again when the petals drop.

Live Stock.

Don't stint the cows' feed, even though they get pasture. In early spring the grass is usually watery, and cows can not get enough of it to supply milk and keep up body weight.

Consider the advantages of a summer silo, especially when pastures are limited. Study during the coming months whether this would be a good investment.

Careful feeding and proper management of the sow and litter will give the pigs a good start in development and insure favorable growth. They should have exercise and opportunity to be out of doors during good weather. They should be protected against cold rains and provided with clean, warm, dry, and comfortable quarters.

Sixty per cent of all pigs born are farrowed during March, April, and May.

Dock all lambs and castrate the ram lambs that will go to market; wethers bring better market prices than rams. This should be done before the lambs are 3 weeks old. The ideal time is when they are 10 to 14 days old.

Poultry.

Locate brood coops or brooders where drainage is good and where there is a good sod and move them to fresh ground every few days.

Cull and kill any chicks that are not thrifty and are not growing well; they may carry disease, and in any case are unprofitable.

Hens are now laying heavily. Be sure that there are nests enough, one for every 4 or 5 hens.

Give the young chicks protection from rain, and from rats, hawks, and other dangers. Farmers' Bulletin 1111 tells how to care for growing chicks.

Farm Operations.

Overhaul your pumps and windmills.

Order your cotton-dusting machinery. (See Farmers' Bulletin 1098.)

Read Farmers' Bulletin 1157 on waterproofing and mildewproofing cotton duck, and on what kinds of canvas are suitable for various farm uses.

Increase the serviceability of your canvas by selecting with care for quality and use; by keeping it dry while stored and drying it immediately after use; by waterproofing and mildewproofing it with the proper materials.

Finish seeding clover in the North. Seeding at this time is best done with a drill. If the ground is wet, do not let stock trample the clover too much.

Plant sorghum seed for sirup production if soil and weather conditions permit. (California and North Central States.)

Uproot wild or cultivated currants and gooseberries that stand within 300 yards of white pines and protect timber against the white-pine blister rust.

Bermuda grass can be controlled by planting infested land to a good shade crop, such as soy beans, velvet beans, or cowpeas.

Asparagus rust does not injure the new rust-resistant Washington asparagus bred

by the Department of Agriculture in cooperation with the Massachusetts Experiment Station. Department Circular 7.

Marketing and Prices.

Cattle receipts at centralized markets usually lightest of the year. Veal calves bring lowest prices and average lowest weight of the year, with receipts usually heaviest.

This is the month of heaviest mortality of hogs in transit to markets.

Bureau of Crop Estimates issues a report on the condition of winter wheat and rye April 1, on the farm labor situation, and on beet-sugar production for 1920-21.

Woods Work.

During cloudy weather plant forest trees for windbreaks, to prevent gullying, and for the production of fence posts. Land not suitable for other purposes may grow good timber. Ordinarily, native species are more likely to succeed than trees brought in from outside.

Wild Life.

The return of the birds becomes noticeable in April. The barn swallow reaches the Southeastern States about April 5, and New England about April 25. The purple martin, after two months' delay in the Southern States, reaches the vicinity of New York City about April 16.

Along with the planting of crops west of the Mississippi, plant some poisoned grain to protect the growing crops from rodent pests. A little time spent at this season in destroying these pests will yield larger returns than the same amount of time and energy spent in planting additional acreage.

Home.

Clean up the trash about your house and premises. Piles of trash about the yard are a fire menace and furnish breeding places for mosquitoes and vermin; they harbor rats and mice; they are a source of various odors and perhaps of communicable disease.

A community house cleaning is a good thing, too. Get the local paper to foster the idea of a spotless town.

April Days.

1. April Fool's Day.
2. First American agricultural paper published in Baltimore, by John Stuart Skinner, 1819.
3. Texas Agricultural Experiment Station organized under Hatch Act, 1889.
4. *Inspect lightning-rod installations; Farmers' Bulletin 842 tells how.*
6. *Put up nest boxes and clean out old ones if you want air-police against insects.*
7. George Washington sowed oats at Mount Vernon, "ground much too wet," 1785.
8. *If you have put off taking that farm inventory, do it now; later is too late.*
10. *Get down the problems on which you'd like help; then ask the county agent about them.*
13. If you want good crops and good stock, seed in time, weed in time, and feed in time.
15. *Confine the hen to a brood coop until her chicks are at least 2 weeks old.*
17. *Guard against garlic flavor in milk. Bring cows off of pasture three or four hours before milking time.*
18. *Dead seeds won't grow. Sow live ones.*
20. *Plow deep enough, but not too deep; let the subsoil stay where it belongs.*
21. *All doors and windows of house and barn should be tightly screened before flies come.*
23. *Dehorning should be done before fly time; but not just before a rain, if caustic is used.*
24. *Look over premises for piles of trash that need removing; then use part of the week in getting rid of them; they are a danger and menace.*
25. Ohio Agricultural Experiment Station organized, 1882.
26. New Jersey College Experiment Station organized under Hatch Act, 1888.
30. *Destroy ground squirrels, prairie dogs, and other animal pests before the new and numerous litters can join the attack on crops and forage.*

Farm Business Reminders.

Breeding Dates, Payments, Meetings, Etc.



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.				
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)						
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Sow.	Ewe.	Cow.	Mare.	
		<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>					
1	S	5 18	6 37	5 10	6 45	5 01	6 54	4 50	7 05	Aug. 23	Sept. 28	Feb. 5	Apr. 6	
2	M	5 17	6 38	5 09	6 46	5 00	6 55	4 49	7 06					
3	Tu	5 16	6 38	5 08	6 46	4 58	6 56	4 47	7 07					
4	W	5 15	6 39	5 07	6 47	4 57	6 57	4 46	7 08					
5	Th	5 14	6 40	5 06	6 48	4 56	6 58	4 44	7 10					
6	Fr	5 13	6 40	5 05	6 49	4 55	6 59	4 43	7 11	28	3	10	11	
7	Sa	5 12	6 41	5 04	6 50	4 54	7 00	4 42	7 12	29	4	11	12	
8	S	5 12	6 41	5 03	6 50	4 52	7 01	4 40	7 13	30	5	12	13	
9	M	5 11	6 42	5 02	6 51	4 51	7 02	4 39	7 14	31	6	13	14	
10	Tu	5 10	6 43	5 01	6 52	4 50	7 03	4 38	7 16	Sept. 1	7	14	15	
11	W	5 10	6 43	5 00	6 53	4 49	7 04	4 36	7 17		2	8	15	
12	Th	5 09	6 44	4 59	6 54	4 48	7 05	4 35	7 18		3	9	16	
13	Fr	5 08	6 45	4 58	6 54	4 47	7 06	4 34	7 19		4	10	17	
14	Sa	5 08	6 45	4 58	6 55	4 46	7 07	4 33	7 20		5	11	18	
15	S	5 07	6 46	4 57	6 56	4 45	7 08	4 32	7 22	6	12	19	20	
16	M	5 06	6 46	4 56	6 57	4 44	7 09	4 30	7 23	7	13	20	21	
17	Tu	5 06	6 47	4 55	6 58	4 44	7 10	4 29	7 24	8	14	21	22	
18	W	5 05	6 48	4 54	6 58	4 42	7 10	4 28	7 25	9	15	22	23	
19	Th	5 04	6 48	4 54	6 59	4 42	7 11	4 27	7 26	10	16	23	24	
20	Fr	5 04	6 49	4 53	7 00	4 41	7 12	4 26	7 27	11	17	24	25	
21	Sa	5 04	6 50	4 53	7 01	4 40	7 13	4 25	7 28	12	18	25	26	
22	S	5 03	6 50	4 52	7 01	4 39	7 14	4 24	7 29	13	19	26	27	
23	M	5 02	6 51	4 51	7 02	4 38	7 15	4 23	7 30	14	20	27	28	
24	Tu	5 02	6 52	4 51	7 03	4 38	7 16	4 23	7 31	15	21	28	29	
25	W	5 02	6 52	4 50	7 04	4 37	7 17	4 22	7 32	16	22	Mar. 1	30	
26	Th	5 01	6 53	4 50	7 04	4 37	7 17	4 21	7 33	17	23		May 1	1
27	Fr	5 01	6 53	4 49	7 05	4 36	7 18	4 20	7 34	18	24			2
28	Sa	5 00	6 54	4 49	7 06	4 35	7 19	4 19	7 35	19	25	3		3
29	S	5 00	6 54	4 48	7 06	4 35	7 20	4 19	7 36	20	26	5	4	
30	M	5 00	6 55	4 48	7 07	4 34	7 21	4 18	7 37	21	27	6	5	
31	Tu	5 00	6 56	4 48	7 08	4 34	7 21	4 17	7 38	22	28	7	6	

Local mean solar time of sunrise and sunset (sun's upper limb), meridian of Greenwich. To obtain the standard time at any station, increase the local time by the number of minutes the station is *west* of the standard meridian (longitude west of standard meridian expressed in minutes divided by 15), or decrease the local time by the number of minutes the station is *east* of the standard meridian. (From the American Ephemeris and Nautical Almanac, 1921.)

Phases of the Moon, Seventy-fifth Meridian Time.

New moon, 7th, 4.02 p. m.; first quarter, 14th, 10.25 a. m.; full moon, 21st, 3.15 p. m.; last quarter, 29th, 4.45 p. m.

**"A swarm of bees in May
Is worth a load of hay."**

May.



GOING FURTHER toward summer, the preparation period ends with the last days of MAY; for by the last of this month practically all planting can be finished. It is not too early to begin the study of profitable outlets for prospective crops and animals, making use of the special services furnished by the Government.

Apple blossoms, budding, blowing,
In the soft May air;
Cups with sunshine overflowing,
Flakes of fragrance, drifting, snowing,
Showering everywhere.

—Lucy Larcom.

May Weather.

May is usually characterized by mild temperatures. As summer approaches, the increase in temperature is usually more pronounced in central and northern districts than in the South; on the average May is about 10° warmer than April in the interior sections of the country. East of the Mississippi River and south of a line from Washington, D. C., to St. Louis, Mo., freezing temperatures have never been experienced in May except in some of the highest parts of the Appalachian Mountains. As a rule, killing frost does not occur after May 10 south of South Dakota, central Iowa and Wisconsin, and the lower Lakes.

The outstanding feature of the distribution of May precipitation is the large rainfall between the Rocky Mountains and the Mississippi River. This is also the region of greatest thunderstorm activity for May, with such storms on an average of about 8 days during the month. The dry season approaches on the Pacific slope, the decrease in rainfall being especially pronounced in California. Rainfall becomes more and more the result of local thunderstorms.

Fruit.

The grape-berry moth is controlled by a spray of arsenate of lead, 1½ pounds powder or 3 pounds paste to 50 gallons water, or Bordeaux mixture applied just after blossoms fall, and repeated in two weeks.

Plant lice can not be killed with arsenicals or stomach poisons. To control them, the spray has to come in contact with the insect. Spray with three-eighths pint nicotine sulphate (40 per cent), 2 pounds soap, and 50 gallons of water.

The codling moth is the most serious apple insect, and from one to six applications of poison may be required for its control. The most important single application is made as soon as the blossoms drop, the work being completed before the calyx cups have closed. Use arsenate of lead, 1 pound of powder or 2 pounds of paste to 50 gallons of water, or if fungous diseases are to be combated also, combine the poison with a fungicide such as Bordeaux mixture 4-4-50.

The imported currant worm, which attacks currants and gooseberries, is controlled by a spray of arsenate of lead, powder 1 pound or paste 2 pounds to 50 gallons water. If first brood is not controlled, a second brood appears shortly before the fruit ripens, at which time use powdered hellebore diluted 5 to 10 times with flour or with air-slaked lime, or as a spray, 1 ounce to 1 gallon water.

Live Stock.

How is the cream separator running? Close skimming is important. See that the separator is in good adjustment, level, and firmly mounted on a solid base. Clean it thoroughly after use.

All classes of swine should have access to pastures now. Castrate pigs before weaning for feeders, but allow likely looking breeding boars to grow out so as to make wise selections before castrating.

Keep the lambs healthy by frequent change to fresh pastures. When shearing, be sure the fleeces are not wet. Store the wool in a clean, dry place and protect it from dust, chaff, straw, or litter of any kind. To prevent ticks and lice, dip the entire flock about 10 days after shearing.

Rotation of pastures helps to control stomach worms and other parasites in sheep. Consult Department Circular 47.

Poultry.

The chief essentials to proper development of growing chicks are good coops or houses, cleanliness, proper feed and water, shade, and free range.

Watch for mites in the brood coops and other houses, spray thoroughly with kerosene, crude petroleum, or some commercial spray.

As soon as the breeding season is over and no more hatching eggs are desired, sell, kill, or separate all male birds so as to have infertile eggs. These keep better than fertile eggs. Hens without a male will lay just as many eggs.

Clean, disinfect, and store away the incubator.

Give the growing chicks free range on grass land; and allow them free access to a good mash. Provide shade.

Break up broodiness in hens by shutting them in a slat-bottom coop; they will lay the sooner.

Preserve eggs in water glass or lime water for home use in fall and winter.

Farm Operations.

Begin to use ice for cooling milk and cream. If you have no ice house but have a cold spring, get piping installed and cool the milk with spring water.

See that the creamery refrigerator is in repair.

If clover seed is raised in your section, get Farmers' Bulletin 971 and learn how to control the clover-flower midge. Seed harvest for crimson clover may begin; save your own seed.

A good time to get lime is when preparing land for corn. Plow down clover for the corn crop.

Sound, tested seed is the basis of a good corn crop. There are other factors that need attention. Consult the county agent.

Watch young grain for army worms, especially during cool, damp springs. Scatter poisoned bran bait when the worms appear. (Farmers' Bulletins 731 and 739.)

It is easier to kill a thousand young weeds in May than a dozen old weeds in August. Use a weeder.

Poisoning boll weevils is as important as cultivation and deserves as much thought and attention.

Growing grain sorghums in the Southern Great Plains is good insurance against crop loss. The man who plants corn there is a gambler with the deck stacked against him. (See Farmers' Bulletin 1137.)

In the North ensilage corn crops can be made more profitable by earlier planting of well-matured seed of large varieties. (See Farmers' Bulletin 1175.)

Cowpeas should not be sown before corn-planting time. The most valuable varieties are the Whippoorwill, Groit, New Era, and Brabham for seed or hay and the Blackeye or the White for table use.

Marketing and Prices.

Price of cattle usually highest of the year.

Movement of spring lambs to market at its height and receipts of sheep generally lightest of the year.

Bureau of Crop Estimates issues estimate of acreage of winter wheat remaining on May 1 to be harvested; acreage of tame and wild hay; condition May 1 of winter wheat, rye, hay, and pastures; farm supplies of hay on May 1; the proportion done on May 1 of the total spring plowing contemplated; and the proportion of spring planting done May 1, 1921, with comparisons. Also estimates of condition on May 1, and losses during the year from

disease of horses, cattle, sheep, and swine; and estimates of maple sugar and sirup and honeybees.

The Bureau of Chemistry publishes statistics on production and stocks of naval stores. These are distributed free to turpentine producers who want them. They may help in planning the coming season's operations.

Woods Work.

Young forest plantations, particularly hardwoods, should be cultivated the same as corn during this month and next.

Wild currants and gooseberries, first shrubs in leaf, are easily seen at this time. Uproot and destroy to protect near-by white pines from blister rust. Yellow blisters rupturing bark of white pines show trees attacked by blister rust. (Northeastern and Lake States.) See Farmers' Bulletin 742.

Wild Life.

The first three weeks of May mark the height of spring migration of birds in the Northeastern States. For bird migrations see Department Bulletin 185.

In plowing time do nothing to discourage the visits of blackbirds, meadow larks, robins, and other birds which follow the newly turned furrows. Many a white grub, wireworm, and cutworm will trouble you no more.

Follow up work in poisoning rodents to eradicate these pests. Join your neighbors in a determined fight to get rid of them throughout the community.

May Days.

1. First American patent for machine for cutting grain issued, 1803.
4. Highest record price of wheat, \$3.45, 1920.
5. Organic act placing agriculture under a separate governmental organization passed by Congress, 1862.
6. Rhodes grass introduced from Cecil Rhodes estate, South Africa, 1903.
8. Smith-Lever Act, for giving instruction and demonstrations in home economics, signed, 1914.
9. *Clean up and paint up; see Farmers' Bulletin 474.*
11. *Weather permitting, take down stoves or fix furnace for summer.*
12. *Watch costs and market, and profits will take care of themselves.*
14. *For cows on young pasture give hay or grain to supplement thin and juicy grass.*
15. Act of Congress creating separate Department of Agriculture approved by Lincoln, 1862.
16. Bureau of Markets established, 1913.
18. *Keep the lambs healthy by frequent changes to fresh pastures.*
23. *Finely ground red pepper on tender vegetation in the garden will keep sparrows from nipping it.*
24. *In plowing time encourage all birds to follow the fresh furrows, to get their fill of white grubs, worms, and cutworms.*
29. Bureau of Animal Industry created by act of Congress, mainly to suppress animal diseases, 1884.
30. Memorial Day.
31. *Spend rainy days in repairing and waterproofing canvas covers.*

Farm Business Reminders.

Breeding Dates, Payments, Meetings, Etc.

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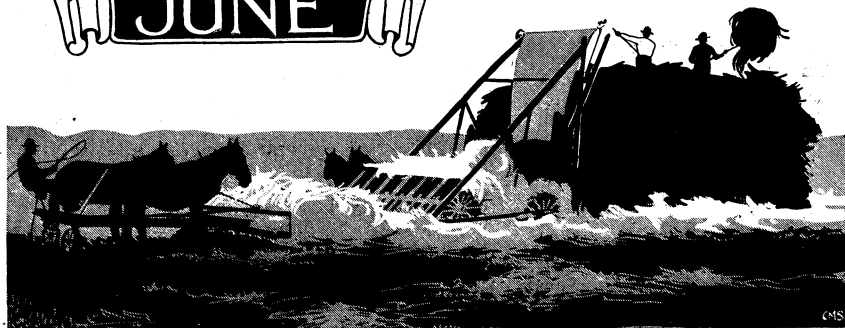
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JUNE



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.			
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)					
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Sow.	Ewe.	Cow.	Mare.
1	W	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	Sept.23 24 25 26	Oct. 29 30 31 Nov. 1	Mar. 8 9 10 11	May 7 8 9 10
2	Th	4 59	6 56	4 47	7 08	4 33	7 22	4 17	7 39				
3	Fr	4 59	6 57	4 47	7 09	4 33	7 23	4 16	7 40				
4	Sa	4 59	6 57	4 47	7 09	4 32	7 24	4 16	7 40				
5	S	4 59	6 58	4 46	7 10	4 32	7 24	4 15	7 41	27 28 29 30 Oct. 1	2 3 4 5 6 7 8	12 13 14 15 16 17 18	11 12 13 14 15 16 17
6	M	4 58	6 58	4 46	7 10	4 32	7 25	4 15	7 42				
7	Tu	4 58	6 59	4 46	7 11	4 32	7 26	4 14	7 43				
8	W	4 58	6 59	4 46	7 12	4 31	7 26	4 14	7 43				
9	Th	4 58	7 00	4 46	7 12	4 31	7 27	4 14	7 44	2 3 4 5	9 10 11 12	19 20 21 22	18 19 20 21
10	Fr	4 58	7 00	4 46	7 13	4 31	7 27	4 13	7 44				
11	Sa	4 58	7 00	4 45	7 13	4 31	7 28	4 13	7 45				
12	S	4 58	7 01	4 45	7 14	4 30	7 28	4 13	7 46				
13	M	4 58	7 01	4 45	7 14	4 30	7 29	4 13	7 46	5 6 7 8 9 10	16 17 18 19 20 21	26 27 28 29	25 26 27 28
14	Tu	4 58	7 02	4 45	7 14	4 30	7 29	4 12	7 47				
15	W	4 58	7 02	4 45	7 15	4 30	7 30	4 12	7 48				
16	Th	4 58	7 02	4 45	7 15	4 30	7 30	4 12	7 48				
17	Fr	4 58	7 02	4 45	7 16	4 30	7 31	4 12	7 48	13 14 15 16	13 14 15 16	23 24 25 26	22 23 24 25
18	Sa	4 58	7 03	4 45	7 16	4 30	7 31	4 12	7 49				
19	S	4 59	7 03	4 45	7 16	4 30	7 31	4 12	7 49				
20	M	4 59	7 04	4 46	7 16	4 30	7 32	4 12	7 50				
*21	Tu	4 59	7 04	4 46	7 17	4 31	7 32	4 13	7 50	11 12 13 14 15 16 17	16 17 18 19 20 21 22	26 27 28 29 30 31 Apr. 1	25 26 27 28 29 30 31
22	W	4 59	7 04	4 46	7 17	4 31	7 32	4 13	7 50				
23	Th	5 00	7 04	4 46	7 17	4 31	7 32	4 13	7 50				
24	Fr	5 00	7 04	4 47	7 18	4 32	7 33	4 14	7 50				
25	Sa	5 00	7 05	4 47	7 18	4 32	7 33	4 14	7 51	18 19 20 21 22	23 24 25 26 27	2 3 4 5 6	June 1 2 3 4 5
26	S	5 00	7 05	4 47	7 18	4 32	7 33	4 14	7 51				
27	M	5 00	7 05	4 48	7 18	4 33	7 33	4 15	7 51				
28	Tu	5 01	7 05	4 48	7 18	4 33	7 33	4 15	7 51				
29	W	5 01	7 05	4 48	7 18	4 33	7 33	4 16	7 50	20 21 22	25 26 27	4 5 6	4 5 6
30	Th	5 02	7 05	4 49	7 18	4 34	7 33	4 16	7 50				

Local mean solar time of sunrise and sunset (sun's upper limb), meridian of Greenwich. To obtain the standard time at any station, increase the local time by the number of minutes the station is *west* of the standard meridian (longitude west of standard meridian expressed in minutes divided by 15), or decrease the local time by the number of minutes the station is *east* of the standard meridian. (From the American Ephemeris and Nautical Almanac, 1921.)

Phases of the Moon, Seventy-fifth Meridian Time.

New moon, 6th, 1.15 a. m.; first quarter, 12th, 4 p. m.; full moon, 20th, 4.41 a. m.; last quarter, 28th, 8.17 a. m.
* Summer solstice (summer commences).

**“Evening red and morning gray
Cheers the traveler on his way;
Evening gray and morning red
Brings down rain upon his head.”**

June.



ULTIVATION is the keynote for JUNE; it gives plants a good start by preventing escape of moisture and competition of weeds. It is part of the defensive campaign against adverse conditions and against insects and disease in field and household, barn and poultry yard. In many States the first harvests come from garden and hayfield this month.

O queenly month of indolent repose!
I drink thy breath in sips of rare perfume,
As in thy downy lap of clover bloom
I nestle like a drowsy child and doze
The lazy hours away.

—James Whitcomb Riley.

June Weather.

High temperatures may be expected occasionally in this month, 100° or higher being of record quite generally throughout the country, except in some northern and some mountainous western districts. The highest recorded temperature in this month at a regular Weather Bureau station was 117° at Yuma, Ariz. The average date of last freezing temperature in spring in extreme northern portions of North Dakota and Minnesota is about June 1, but it is later than this in some mountain districts of the West. Relatively large amounts of rainfall continue as a rule, over the Great Plains from central Texas northward. The fact that the larger portion of the annual precipitation in this section falls in the spring and summer months gives it prominence as a great cereal-producing region. The heaviest rainfall of June is usually in the Florida peninsula. In central and southern Pacific coast districts the dry season is on by June, when practically no rain falls, except for occasional showers in the mountains.

Plans.

Arrange to attend some summer school where you can get a good course in agricultural instruction.

Why not arrange with the county agent to inspect some of the demonstration work being carried on in the county and

plan an auto trip to see some of the successful farms?

Haying time for red and alsike clover. Also time to plan for the seed crop in September.

Do not stop cultivating crops too soon.

Buy this month tested seed of hairy vetch for planting from August 1 to 15 in the Northern States.

Fruit.

Apple caterpillars that appear in the summer, such as the yellow-necked caterpillars, red-humped apple worm, and fall webworm, may be destroyed by a summer application of arsenate of lead. If the insects are young, 1 pound of the powder or 2 pounds of the paste to 50 gallons of water will do; for older and larger caterpillars use double quantity.

To destroy the grape rootworm, cultivate the vineyard during early June. Spray the vines as soon as adult beetles appear with arsenate of lead, 1½ pounds powder or 3 pounds paste in 50 gallons of water, or in 50 gallons Bordeaux mixture if fungous diseases are present.

To destroy grape leaf-hopper, spray in late June or early July when the nymphs or young insects are most abundant. Use 40 per cent nicotine sulphate, one-fourth pint to 50 gallons soapy water (2 pounds soap), or with 50 gallons Bordeaux mixture, to control fungous diseases. Hit lower sides of leaves forcibly.

Live Stock.

See that the lambs are changed to fresh pasture at least every two weeks during the hot summer months, and avoid loss from stomach worms.

Immunize spring pigs to protect them from cholera. Clean up premises, lime and disinfect. Seed summer crops. Dip all swine to control lice. Breed sows for fall litters.

Poultry.

Market all but breeding cockerels as soon as they reach suitable size, usually as broilers. Continue to cull and market all undersized, unthrifty chickens of both sexes.

Be sure that the growing stock is not crowded; there should be room on the roosts for all.

Save all early hatched, well-grown pullets. They will make the best fall and winter layers.

Give the growing stock skim milk or buttermilk to drink.

Keep the market eggs in a cool place, and market them at least twice a week.

Farm Operations.

Make sure your binder is in condition for operation; overhaul haying machinery.

In June the farmer's fancy turns to thoughts of labor-saving devices in the hayfield. Farmers' Bulletin 987 has the whole story.

Canvas covers that have been used during rain storms are likely to mildew; dry them immediately by hanging them over a fence or under a wagon shed. See Farmers' Bulletin 1157.

To destroy grasshoppers scatter poisoned bran bait at the rate of 7 to 10 pounds per acre, when grasshoppers are young (June 1 to Aug. 1). (Farmers' Bulletin 747.)

Recent experiments have shown that for a period of years larger yields are obtained and better stands maintained where alfalfa is not cut until well in bloom. This holds true even though the basal shoots have made sufficient growth to be caught by the mower.

Can you build a good stack of hay? Well-stacked grain can be left for weeks or months before thrashing. (See Farmers' Bulletins 678 and 892.)

Buckwheat is a good crop for poor lands. It does best where the climate is moist and cool. A by-product of a good crop is honey where bees are kept. An acre may supply as much as 150 pounds of honey in a season.

Marketing and Prices.

Receipts of cow beef at eastern markets lowest of the year.

Hog prices usually reach the lowest point of the six-month period from March to September.

Bureau of Crop Estimates reports condition of cotton; preliminary estimate of acreage of spring wheat, oats, and barley; condition and forecast on June 1 of winter wheat, spring wheat, oats, barley, rye, apples, peaches, hay, and condition of pasture.

Woods Work.

During this month or next, it is easier because of the leaves to pick out and mark those trees which should be removed to improve the woods. Next winter when it comes time to cut them out, everybody will be glad that they are marked.

Live stock goes to the woods for shade and forage. In the long run it pays to restrict the live stock to certain portions of the woods by fencing off the remainder. Young forest trees have little chance to develop if they are browsed and trampled.

Wild Life.

If you want to know how many of your feathered friends are likely to help you this summer in your fight on insects, now is the time to make a count in the Northern States—earlier farther South. See Department Bulletins 187 and 296.

Garden.

The squash bug, commonly known as the "stinkbug" because of its disagreeable odor, is controlled by clean culture. Plow or spade as soon as crop is harvested, hand pick the adults as soon as they appear, and collect eggs which are

deposited in brown masses on the under-side of the leaves. Use a contact spray on the immature forms of 40 per cent nicotine sulphate, three-fourths pint; soap, 4 pounds; water, 50 gallons.

Time-table for Cooking Fresh Vegetables in Water.

Asparagus.....	15 to 20 minutes.
Beans, Lima (green).....	$\frac{3}{4}$ to 1 hour.
Beans, string.....	1 to 3 hours.
Beets, old.....	3 to 4 hours.
Beets, young.....	$\frac{3}{4}$ to 1 hour.
Cabbage.....	20 to 30 minutes.
Carrots.....	30 to 60 minutes.
Cauliflower.....	20 to 30 minutes.
Corn, green.....	10 to 15 minutes.
Onions.....	20 to 30 minutes.
Parsnips.....	30 to 45 minutes.
Peas, green.....	20 to 30 minutes.
Potatoes.....	30 to 40 minutes.
Spinach.....	15 to 30 minutes.
Squash.....	20 to 30 minutes.
Turnips.....	30 to 45 minutes.

June Days.

2. *Protect small fruits with nets rather than by killing or driving away the friendly birds.*
3. *Arrange for building that silo; you need one if you have 10 cows.*
4. *This may be a good day for the first picnic.*
6. *Select the most vigorous and best growing cockerels for breeders.*
8. *Organization of Tennessee Agricultural Experiment Station, 1882.*
10. *Feterita introduced from Sudan, 1901.*
11. *West Virginia Agricultural Experiment Station organized under Hatch Act, 1888.*
12. *Snow fell for three days and earth frozen half an inch deep in Maine; known as year "without a summer," 1816.*
13. *Make sure the binder is all set for perfect operation.*
14. *Flag Day. Mark the trees that need to be removed to improve the woodlot.*
15. *First Farmers' Bulletin of the department issued, 1889.*
20. *Keep young chicks apart from the mature fowls; they will develop faster.*
24. *Are you a member of a cow-testing association? If you have 10 cows you should be.*
25. *How about the summer meeting at your college of agriculture?*
27. *Don't let the weeds take your summer garden.*
30. *Pennsylvania Experiment Station organized under Hatch Act, 1887.*

Farm Business Reminders.

Breeding Dates, Payments, Meetings, Etc.



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.			
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)					
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Sow.	Ewe.	Cow.	Mare.
1	Fr	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	Oct. 23 24	Nov. 28 29	Apr. 7 8	June 6 7
2	Sa	5 02 5 02	7 05 7 05	4 49 4 50	7 18 7 18	4 34 4 35	7 33 7 33	4 16 4 17	7 50 7 50				
3	S	5 03	7 05	4 50	7 18	4 35	7 32	4 18	7 50	25	Dec. 30	9	8
4	M	5 03	7 05	4 50	7 18	4 36	7 32	4 18	7 50	26		10	9
5	Tu	5 04	7 05	4 51	7 18	4 36	7 32	4 19	7 49	27	2	11	10
6	W	5 04	7 05	4 51	7 17	4 37	7 32	4 20	7 49	28	3	12	11
7	Th	5 04	7 05	4 52	7 17	4 38	7 32	4 20	7 49	29	4	13	12
8	Fr	5 05	7 04	4 52	7 17	4 38	7 31	4 21	7 48	30	5	14	13
9	Sa	5 05	7 04	4 53	7 16	4 39	7 31	4 22	7 48	31	6	15	14
10	S	5 06	7 04	4 54	7 16	4 40	7 30	4 22	7 47	Nov. 1	7	16	15
11	M	5 06	7 04	4 54	7 16	4 40	7 30	4 23	7 47	2	8	17	16
12	Tu	5 07	7 04	4 55	7 16	4 41	7 30	4 24	7 46	3	9	18	17
13	W	5 08	7 03	4 55	7 15	4 42	7 29	4 25	7 46	4	10	19	18
14	Th	5 08	7 03	4 56	7 15	4 42	7 29	4 26	7 45	5	11	20	19
15	Fr	5 08	7 03	4 57	7 15	4 43	7 28	4 27	7 44	6	12	21	20
16	Sa	5 09	7 02	4 57	7 14	4 44	7 28	4 28	7 44	7	13	22	21
17	S	5 10	7 02	4 58	7 14	4 44	7 27	4 28	7 43	8	14	23	22
18	M	5 10	7 02	4 59	7 13	4 45	7 26	4 29	7 42	9	15	24	23
19	Tu	5 11	7 01	4 59	7 12	4 46	7 26	4 30	7 41	10	16	25	24
20	W	5 11	7 01	5 00	7 12	4 47	7 25	4 31	7 40	11	17	26	25
21	Th	5 12	7 00	5 01	7 11	4 48	7 24	4 32	7 39	12	18	27	26
22	Fr	5 12	7 00	5 01	7 11	4 49	7 23	4 33	7 38	13	19	28	27
23	Sa	5 13	6 59	5 02	7 10	4 49	7 23	4 34	7 38	14	20	29	28
24	S	5 14	6 59	5 03	7 10	4 50	7 22	4 36	7 36	15	21	30	29
25	M	5 14	6 58	5 04	7 09	4 51	7 21	4 37	7 36	16	22	May 1	30
26	Tu	5 15	6 58	5 04	7 08	4 52	7 20	4 38	7 34	17	23	2	1
27	W	5 15	6 57	5 05	7 07	4 53	7 19	4 39	7 33	18	24	3	2
28	Th	5 16	6 56	5 06	7 07	4 54	7 18	4 40	7 32	19	25	4	3
29	Fr	5 17	6 56	5 06	7 06	4 55	7 17	4 41	7 31	20	26	5	4
30	Sa	5 17	6 55	5 07	7 05	4 56	7 16	4 42	7 30	21	27	6	5
31	S	5 18	6 54	5 08	7 04	4 56	7 15	4 43	7 29	22	28	7	6

Local mean solar time of sunrise and sunset (sun's upper limb), meridian of Greenwich. To obtain the standard time at any station, increase the local time by the number of minutes the station is *west* of the standard meridian (longitude west of standard meridian expressed in minutes divided by 15), or decrease the local time by the number of minutes the station is *east* of the standard meridian. (From the American Ephemeris and Nautical Almanac, 1921.)

Phases of the Moon, Seventy-fifth Meridian Time.

New moon, 5th, 8.36 a. m.; first quarter, 11th, 11.16 p. m.; full moon, 19th, 7.08 p. m.; last quarter, 27th, 9.20 p. m.

"When the perfume of flowers is unusually perceptible, rain may be expected."

July.



LUXURIANT growth marks JULY, in spite of hot sun and drying winds. Everything should be done to see that plant growth is not checked. Comfort should be given to man and beast. Fly prevention and control go a long way. Anything conducive to coolness is welcome, whether fruit-juice beverages or visits to the old swimmin' hole.

A rustle of corn leaves; a tinkle
Of bells on the hills; a twinkle
Of sheep in the lowlands; a bevy
Of bees where the clover is heavy;
A butterfly blundering by—

And that is July!

—James Newton Matthews.

July Weather.

July is, as a rule, the warmest month of the year, with frequent periods of high temperature in most sections of the country, and some extremely hot weather. Occasionally the hot waves are of extended duration and in some of the important agricultural districts, particularly in the middle West, the heated periods may be attended by "hot winds," which prove disastrous to vegetation. The average summer temperature in the Southern States is considerably higher than in the Northern, but, at the same time, higher temperatures are of record in the Dakotas and Montana than have been known in Alabama, Mississippi, or Florida.

July rainfall results largely from local thunderstorms, this being the month of their greatest frequency. Along the west coast of the Florida peninsula they occur on the average on more than 20 days of the month. July rainfall is somewhat less than that of June over the Great Plains States, but in western Texas, New Mexico, and Arizona this is usually the wettest time of the year. The dry season is at its height on the Pacific slope.

Plans.

Make preparations for repairing and painting buildings.

Plan your building improvements well in advance of the slack time in farm work.

Get all the information possible regarding the kind of building you intend to erect; write to your State agricultural college, or to the United States Department of Agriculture; plan your structure carefully; get all the necessary materials and have them on hand so that you can push the work without loss of time.

Consider rye for fall planting. It is much harder than wheat and can be grown as a winter grain in colder and more exposed places. It is much better adapted to poor sandy soils and will endure more acidity in the soil than wheat, oats, or barley. (See Farmers' Bulletin 756.)

Tree surgery can be done successfully by anyone who is familiar with the use of the saw and gouge and who can follow printed directions carefully. It can be done at any time of the year when other work is slack, except when the buds and leaves are developing in the spring. (See Farmers' Bulletin 1178.)

Live Stock.

Supply the sheep flock with cool, shady pastures and see that they have a constant supply of good water. If a good purebred ram is not already on hand, get one for the fall breeding season.

Poultry.

Be on the lookout for mites; make your feed produce chicken meat, not chicken mites.

Be sure the chickens and hens have a plentiful supply of fresh drinking water; keep the water dishes clean.

Provide plenty of ventilation in the houses.

JULY.

Cull and market any hens which molt at this time; they are unprofitable to keep.

A producing flock of poultry adds to the farm income. Why not get the county agent to arrange for a culling demonstration in your neighborhood? The hen that cackles may not be the one that lays the most eggs.

Farm Operations.

Take out stumps and rocks during next two months.

Build and repair artificial shades and shelters in lots and pastures.

Farm implements, as a rule, don't wear out—they rust out. Make sure your binder is in condition for operation. A binder, under eastern conditions, averages a little over three days' work a year, or a total of 53 days of work in its 15 years of life.

Clean out and repair granaries.

The song of the sower is in Farmers' Bulletin 943 on Haymaking. Have you ever tried curing hay on trucks? See Farmers' Bulletin 956. Don't let your hay get too ripe before you cut it. If you have not tried hay caps, get a few and try them this year. (Farmers' Bulletin 977.)

Department Bulletin 627 discusses cost of harvesting wheat by different methods.

In the Gulf States a 10 per cent loss of the corn crop is due to weevil attack. Keep your corn safe from weevil attack until you can sell to advantage or turn it into meat. Consult Farmers' Bulletin 1029.

Support campaigns to kill out the Angoumois grain moth; prompt harvesting, thrashing, and storing in deep, tight bins or in tight sacks is effective.

Mammoth clover seed and some alsike clover seed may be harvested this month; cut early in the morning.

To eradicate the Hessian fly, plow down stubble soon after harvest where practicable (July 1 to August 15); destroy volunteer wheat by disking or plowing

(July 1 to August 15). Practice crop rotation. (See Farmers' Bulletin 1083.)

Beans, peas, and cowpeas are damaged in storage and field by weevils. Harvest the crop as soon as it is mature, thrash or shell the seeds and treat by fumigation, heat, or cold storage. (See Farmers' Bulletin 983.)

Vetch and rye grown as a combination crop are well suited for use either for green manure or hay and are adapted to a wide range of conditions.

Do not expect to eradicate boll weevils by poisoning with calcium arsenate. Poisoning merely controls them sufficiently to permit a full crop of cotton to develop. You can always find weevils in the successfully poisoned field.

An Arkansas farmer estimates that 10 geese grazing in a cotton field do the work of 1 man with a hoe.

Marketing.

Cattle and lambs from western ranges begin to appear on middle western markets.

The Bureau of Crop Estimates issues a summary of the acreage, condition on July 1, and forecast of certain crops.

Wood's Work.

The damage being done by insects or diseases to forest trees is not readily apparent. Measures to combat these can be learned from the Bureau of Plant Industry.

Wild Life.

Bird fountains and baths are described in Farmers' Bulletins 621, 760, 844, and 912.

The interval between planting and cultivation of crops and the harvest time is a favorable season to look over your land to see if ground squirrels, prairie-dogs, pocket gophers, or other rodent pests are still at work, and to complete the clean-up before they once more return to their burrows for their long winter sleep. Completion of the task at this time will save you much additional work next spring.

A separate laundry which may be combined with an entry washroom for the men and children coming in from outdoors is more sanitary than using the kitchen for a general-purpose room.

July Days.

1. Montana Agricultural Experiment Station organized, 1893.
2. Act apportioning lands for State agricultural colleges passed, 1862.
3. Migratory-bird treaty act, protecting birds between United States and Canada, enacted, 1918.
4. Independence Day.
5. *Thundershowers and sultry? Read about hay caps in Farmers' Bulletin 977.*
8. *How about providing artificial shade in lots and pastures that have no trees?*
10. Highest temperature on official record in United States at Greenlands Ranch, California, 134°, 1913.
11. *Keep the harness clean, especially the collars of work horses.*

13. *This is a good time to visit your State experiment station. Get up a party and take the county agent along as a guide.*
15. *Watch for hens that molt early; they are seldom good layers.*
17. *First large shipment of Deglet Noor offshoots from Algeria, planted in Arizona, 1900.*
18. *Kitchen tables that are too low cause many backaches. Make kitchen tables and equipment so the housekeeper does not have to stoop or strain.*
20. *First agricultural experiment station in United States founded at Middletown, Conn., 1875.*
21. *Cultivating corn under a July sun holds no joy for you, but it's death to the weeds.*
22. *Carbon disulphide is a cheap and effective fumigant for many insect pests. Learn about it from Farmers' Bulletin 799.*
25. *Be sure that the hogs have an abundant water supply.*
29. *Make preparations for repairing and painting buildings.*
30. *Rhode Island Agricultural Experiment Station organized under Hatch Act, 1888.*
31. *Highest record price of hogs, \$23.60, 1919.*

Farm Business Reminders.

Breeding Dates, Payments, Meetings, Etc.

1. The first part of the document is a title page. It contains the title "The History of the County of York" and the author's name "John Smith".

2. The second part of the document is a preface. It discusses the purpose of the work and the sources of information used.

3. The third part of the document is the main body of the text. It is divided into several chapters, each dealing with a different aspect of the county's history.

4. The fourth part of the document is a list of references. It includes a list of books and other sources used in the research.

5. The fifth part of the document is an index. It provides a list of names and places mentioned in the text, along with their corresponding page numbers.



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.			
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)					
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.				
1	M	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	Nov. 23 24 25 26 27 28	Dec. 29 30 31 Jan. 1 2 3	May 8 9 10 11 12 13	July 7 8 9 10 11 12
2	Tu	5 18	6 54	5 09	7 03	4 57	7 14	4 44	7 27				
3	W	5 19	6 53	5 09	7 02	4 58	7 13	4 46	7 26				
4	Th	5 20	6 52	5 10	7 02	4 59	7 12	4 47	7 25				
5	Fr	5 20	6 51	5 11	7 01	5 00	7 11	4 48	7 24				
6	Sa	5 21	6 50	5 12	7 00	5 01	7 10	4 49	7 22				
7	S	5 21	6 50	5 12	6 59	5 02	7 09	4 50	7 21	Dec. 30 31 1 2 3 4 5	4 5 6 7 8 9 10	14 15 16 17 18 19 20	13 14 15 16 17 18 19
8	M	5 22	6 49	5 13	6 58	5 03	7 08	4 51	7 19				
9	Tu	5 23	6 48	5 14	6 57	5 04	7 06	4 52	7 18				
10	W	5 23	6 47	5 15	6 56	5 05	7 05	4 54	7 16				
11	Th	5 24	6 46	5 16	6 54	5 06	7 04	4 55	7 15				
12	Fr	5 24	6 45	5 16	6 54	5 07	7 03	4 56	7 14				
13	Sa	5 25	6 44	5 17	6 52	5 08	7 02	4 57	7 12	6 7 8 9 10 11 12	11 12 13 14 15 16 17	21 22 23 24 25 26 27	20 21 22 23 24 25 26
14	S	5 26	6 44	5 18	6 51	5 09	7 00	4 58	7 10				
15	M	5 26	6 43	5 18	6 50	5 10	6 59	5 00	7 09				
16	Tu	5 27	6 42	5 19	6 49	5 11	6 58	5 01	7 07				
17	W	5 27	6 41	5 20	6 48	5 12	6 56	5 02	7 06				
18	Th	5 28	6 40	5 21	6 47	5 12	6 55	5 03	7 04				
19	Fr	5 28	6 39	5 22	6 46	5 14	6 53	5 04	7 03	10 11 12	15 16 17	25 26 27	24 25 26
20	Sa	5 29	6 38	5 22	6 44	5 14	6 52	5 06	7 01				
21	S	5 29	6 37	5 22	6 43	5 15	6 51	5 07	6 59				
22	M	5 30	6 36	5 23	6 42	5 16	6 49	5 08	6 58				
23	Tu	5 31	6 35	5 24	6 41	5 17	6 48	5 09	6 56				
24	W	5 31	6 33	5 25	6 39	5 18	6 46	5 10	6 54				
25	Th	5 32	6 32	5 26	6 38	5 19	6 45	5 11	6 52	16 17 18 19	21 22 23 24	31 June 1 2 3	30 31 Aug. 1 2
26	Fr	5 32	6 31	5 27	6 37	5 20	6 43	5 13	6 51				
27	Sa	5 33	6 30	5 28	6 36	5 21	6 42	5 14	6 49				
28	S	5 33	6 30	5 28	6 36	5 21	6 42	5 14	6 49				
29	M	5 34	6 29	5 28	6 34	5 22	6 40	5 15	6 47				
30	Tu	5 34	6 28	5 29	6 33	5 23	6 39	5 16	6 46				
31	W	5 35	6 27	5 30	6 32	5 24	6 37	5 17	6 44	20 21 22 23	25 26 27 28	4 5 6 7	3 4 5 6
1	Th	5 35	6 26	5 30	6 30	5 25	6 36	5 18	6 42				
2	Fr	5 35	6 25	5 30	6 30	5 25	6 36	5 18	6 42				
3	Sa	5 36	6 24	5 31	6 29	5 26	6 34	5 20	6 40				

Local mean solar time of sunrise and sunset (sun's upper limb), meridian of Greenwich. To obtain the standard time at any station, increase the local time by the number of minutes the station is *west* of the standard meridian (longitude west of standard meridian expressed in minutes divided by 15), or decrease the local time by the number of minutes the station is *east* of the standard meridian. (From the American Ephemeris and Nautical Almanac, 1921.)

Phases of the Moon, Seventy-fifth Meridian Time.

New moon, 3d, 3.18 p. m.; first quarter, 10th, 9.14 a. m.; full moon, 18th, 10.28 a. m.; last quarter, 26th, 7.51 a. m.

“Fair weather cometh out of the North.”

August.



VARIED activities mark AUGUST, with no great outstanding farm operations. A slight let-up allows for a picnic, or just to "go fishin'." Pastures are full; drains and fences may be fixed; it is well to get ready for later harvests, and to provide barrels, boxes, and bags. The garden is yielding abundantly, and canning holds sway in the household.

And from the hot field's farthest edge
The cricket's soft refrain
With mellow accent tells the tale
That August's here again.

—Helen Maria Winslow.

August Weather.

Temperature conditions in August on the average differ but little from those of July, but as a rule August is slightly cooler, except on the Pacific coast, where the reverse is true. In some Pacific coast districts September is the warmest month of the year.

In August, as in July, rainfall is largely the result of thunderstorms; and the region of their greatest frequency, as well as that of heaviest rainfall, is in portions of the Southeastern States. The dry season continues in the Pacific Coast States, but rainfall still is comparatively heavy in the far Southwest, including western Texas, New Mexico, and Arizona. Droughts are comparatively frequent in the Central West and are occasionally accompanied by high temperatures and "hot winds," which greatly intensify the injury to vegetation.

Plans.

Figure on ordering lime to put on the wheat ground.

In preparation for next year, if you have a cold spring arrange to pipe the water to cooling tanks in which cans of milk may be set. The water should flow into the tank near the bottom, and be drained off near the top, so that it is level with the necks of the cans. Milk should be cooled to 50° F. or lower, as soon as possible after milking.

Fruit.

To destroy the peach-tree borer, worm young tree under 6 years old with a wire and knife in the fall or spring, or both. On trees 6 years or older the new method of using para-dichlorobenzene gives promise. This material should be applied in the fall. In the North about September 1; Middle States about September 10; farther south, the latter part of September, to October 10 in the cotton belt. Read Department Bulletin 796 before purchasing or using this chemical.

If bunches of grapes are tied up in stout bags they will not only be protected from birds, which pierce grapes chiefly to satisfy thirst, but will ripen more evenly and be more perfect in every way.

Live Stock.

Owners of tuberculosis-free herds should recognize the danger of infection if they show animals at fairs and expositions where untested cattle occupy the same buildings.

Hogging down crops is a way to grow pork with less labor. Farmers' Bulletin 614 goes into this.

Manage to have a good pasture for the breeding ewes to feed on during the breeding season. Ewes that are thin should be on this pasture two or three weeks before the rams are turned in.

Poultry.

Market the surplus cockerels from the poultry flock, either as broilers or roasters, as soon as they are large enough.

Cull and market any hens molting to any great extent in this month. After

AUGUST.

molting begins, egg production stops, and the hen is carried at a loss. Early molters are not worth carrying for another year.

Keep the young stock growing by liberal feeding.

Put nests in the houses occupied by the pullets. A few may begin to lay; and eggs laid on the floor are likely to get broken and lead to the habit of egg eating.

Figure on seeding down any poultry yards or runs which are not in permanent sod. Rye, winter oats, and winter wheat are good crops for poultry yards.

Farm Operations.

Repair fences; clean up feeding floors, pens, and paddocks.

Canvas which will not be needed any more this year should be dried thoroughly and stored in a light, dry place. (See Farmers' Bulletin 1157.)

Harvest sweet clover seed; watch the second crop of red clover toward the end of the month. If it fills well, it will pay to leave it for seed; if not, better cut for hay. Sow for cover crop.

Seed alfalfa and grasses for next season during this month, or when proper in your locality.

Losses of sweet potatoes in storage have been reduced from 50 to 2 per cent by growers who have used storage house plans developed by the department. (See Farmers' Bulletin 970.)

Don't crack barley in thrashing. Sound barley still is in demand for malting. Broken kernels lower the price. (See Farmers' Bulletin 968.)

Ferns in pasture are best controlled by mowing twice a year, just before the spores mature. The old advice of Thomas Tusser is still good:

"In June and in August, as well doth appeere,
Is best to mowe Brakes of all times of the Yeere."

Fruits and vegetables in package form when shipped interstate should bear

a plain and conspicuous statement of the quantity of contents in each package.

Marketing.

Receipts of packer sows heavy at all markets.

Average weight of hogs usually heavier, though September may exceed the August average.

Bureau of Crop Estimates issues a summary of conditions of principal crops on August 1.

Woods Work.

Cultivation of forest plantations should cease about August 1. If carried on longer the trees may suffer from early frost.

In the South this is a good month to peel trees for posts if it has not been done previously.

Examine the underside of currant and gooseberry leaves for yellow rust; uproot these bushes to save near-by white pines from blister rust.

Wild Life.

The fall migration of birds to their winter homes begins in the Northeastern States about the last of August.

The Federal hunting season on migratory shore birds (black-bellied and golden plover and yellowlegs) opens in several of the Northeastern States on August 1. For seasons and States see the annual game law bulletin of the Department of Agriculture.

Coyote and wolf pups are beginning to run; protect your flocks and poultry by trapping the pups while they are easy to get (west of the Mississippi). Wolves, coyotes, and other predatory animals each year destroy live stock having an estimated value of \$20,000,000. If your sheep, calves, or colts are being destroyed you are interested in this loss. Destroy adult animals and prevent the escape of pups from the burrows.

Home and Community.

It is a good thing to get away from the farm at least once a year. Why not plan a little auto trip and take the whole family to see some of the State's beauty spots? The National Forests offer unusual opportunities for recreation. Write the Department of Agriculture for information.

When fresh fruits and vegetables are plentiful they should be used freely to replace more expensive foods. Ways to use them in place of meat and cereals are given in Farmers' Bulletin 871.

Sweep linoleum with a soft brush and dust with a dry or oiled mop. Occasionally clean it more thoroughly with a cloth wrung out of suds made with lukewarm water and soap containing no free alkali, rinse with clear water, and wipe dry with another cloth. Wet only a small space at a time, and never flood a linoleum-covered floor. Strong soaps and cleaning powders containing alkali injure linoleum and should never be used on it.

August Days.

1. Agricultural experiment station established in Guam, 1908.
2. *For successful canning use clean, fresh materials, perfect containers, good rubber rings. Heat long enough to insure preservation and air-tight sealing.*

3. *Repair and paint farm buildings.*
4. New Hampshire Experiment Station organized under Hatch Act, 1887.
7. *From the Ohio River south this is a good time to seed red clover.*
9. *Ice cream tastes good these days. Make it at home.*
10. *Select seed corn from stalks standing where they grew. See Farmers' Bulletin 1175.*
12. Agricultural experiment station established at Sitka, Alaska, 1898.
13. First number of Weekly News Letter, official publication of the department, issued, 1913.
15. *Tie grape bunches in paper bags; bagging makes more perfect bunches.*
18. Cotton futures act passed, 1914.
20. Plant quarantine act passed, 1912.
24. Cornerstone of Maryland Agricultural College laid, 1858.
26. *Profits and weeds don't grow together.*
27. *Efficient use of man labor distinguishes the farmer from the failure.*
29. *Market surplus cockerels either as broilers or roasters.*
30. Second Morrill Act, further endowing colleges of agriculture, became a law, 1890.
31. Standard container act passed, 1916.

Seed testing is cheap insurance.

Better be safe than sorry; plant good seeds.

Farm Business Reminders.

Breeding Dates, Payments, Meetings, Etc.



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.			
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)					
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Sow.	Ewe.	Cow.	Mare.
1	Th	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	Dec. 24	Jan. 29	June 8	Aug. 7
2	Fr	5 36	6 23	5 32	6 28	5 27	6 33	5 21	6 38	25	30	9	8
3	Sa	5 37	6 22	5 33	6 26	5 28	6 31	5 22	6 36	26	31	10	9
4	S	5 38	6 21	5 33	6 25	5 29	6 29	5 23	6 35	27	Feb. 1	11	10
5	M	5 38	6 20	5 34	6 24	5 30	6 28	5 24	6 33	28	2	12	11
6	Tu	5 39	6 18	5 35	6 22	5 31	6 26	5 26	6 31	29	3	13	12
7	W	5 39	6 17	5 36	6 21	5 32	6 24	5 27	6 29	30	4	14	13
8	Th	5 40	6 16	5 36	6 19	5 32	6 23	5 28	6 27	31	5	15	14
9	Fr	5 40	6 15	5 37	6 18	5 34	6 21	5 29	6 25	Jan. 1	6	16	15
10	Sa	5 41	6 14	5 38	6 16	5 34	6 20	5 30	6 24	2	7	17	16
		5 41	6 12	5 39	6 15	5 35	6 18	5 32	6 22				
11	S	5 42	6 11	5 39	6 14	5 36	6 16	5 33	6 20	3	8	18	17
12	M	5 42	6 10	5 40	6 12	5 37	6 15	5 34	6 18	4	9	19	18
13	Tu	5 43	6 09	5 41	6 11	5 38	6 13	5 35	6 16	5	10	20	19
14	W	5 44	6 07	5 42	6 09	5 39	6 12	5 36	6 14	6	11	21	20
15	Th	5 44	6 06	5 42	6 08	5 40	6 10	5 38	6 12	7	12	22	21
16	Fr	5 45	6 05	5 43	6 06	5 41	6 08	5 39	6 10	8	13	23	22
17	Sa	5 45	6 04	5 44	6 05	5 42	6 07	5 40	6 08	9	14	24	23
18	S	5 46	6 02	5 44	6 04	5 43	6 05	5 41	6 06	10	15	25	24
19	M	5 46	6 01	5 45	6 02	5 44	6 03	5 42	6 05	11	16	26	25
20	Tu	5 47	6 00	5 46	6 01	5 45	6 02	5 44	6 03	12	17	27	26
21	W	5 47	5 59	5 47	5 59	5 46	6 00	5 45	6 01	13	18	28	27
22	Th	5 48	5 57	5 47	5 58	5 47	5 59	5 46	5 59	14	19	29	28
23*	Fr	5 48	5 56	5 48	5 56	5 48	5 57	5 47	5 57	15	20	30	29
24	Sa	5 49	5 55	5 49	5 55	5 49	5 55	5 48	5 55	16	21	July 1	30
25	S	5 50	5 54	5 50	5 53	5 50	5 53	5 50	5 53	17	22	2	31
26	M	5 50	5 52	5 50	5 52	5 51	5 52	5 51	5 51	18	23	3	Sep. 1
27	Tu	5 51	5 51	5 51	5 50	5 52	5 50	5 52	5 49	19	24	4	2
28	W	5 51	5 50	5 52	5 49	5 53	5 48	5 53	5 47	20	25	5	3
29	Th	5 52	5 49	5 53	5 48	5 54	5 47	5 55	5 46	21	26	6	4
30	Fr	5 52	5 47	5 53	5 46	5 55	5 45	5 56	5 44	22	27	7	5

Local mean solar time of sunrise and sunset (sun's upper limb), meridian of Greenwich. To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian (longitude west of standard meridian expressed in minutes divided by 15), or decrease the local time by the number of minutes the station is east of the standard meridian. (From the American Ephemeris and Nautical Almanac, 1921.)

Phases of the Moon, Seventy-fifth Meridian Time.

New moon, 1st, 10.33 p. m.; first quarter, 8th, 10.30 p. m.; full moon, 17th, 2.20 a. m.; last quarter, 24th, 4.18 p. m.

*Autumnal equinox. (Autumn commences.)

"When the peacock loudly bawls,
Soon we'll have both rain and squalls."

September.



LOOKING toward winter, SEPTEMBER is the month of fruitfulness. Barns, silos, cribs, bins, and barrels are filled. Crops move to market. Everything is made shipshape for winter. Let every member of the family visit the fair, preferably as an exhibitor. Even if no prize is won, you at least give the winner that much more competition.

September is here, with the ripened seeds,
And the homely smell of the autumn weeds.
My heart goes back to a vanished day,
And I am again a boy at play
In the stack behind the barn.

— Charles G. D. Roberts.

September Weather.

In most sections of the country September is usually considerably cooler than August, but with some high temperatures, especially between the Rocky Mountains and the Mississippi River. Temperatures of 100° or slightly higher have been experienced generally in this area, but to the east of the Mississippi River only a few stations have records as high as 100° in September. Cool weather may also be experienced during this month; in fact, killing frosts have been known near its close as far south as Oklahoma and Tennessee. The average date of the first killing frost in fall in the Dakotas, Minnesota, northern Wisconsin, and the interior Northeast ranges from September 15 to 25.

Rainfall in most districts east of the Rocky Mountains is appreciably less in September than in August, but in a few instances it is somewhat greater. In New Mexico and Arizona precipitation is lighter, but in the northern Pacific coast sections there is usually a marked increase in rainfall during this month, the averages ranging from 4 to 6 inches, against 2 inches for the preceding month.

Plans.

Study market conditions so that next year's work will bring greater returns.

Encourage boys and girls to complete high-school education; help the boy to

plan his vocational agricultural school study; every school should take part in the agricultural exhibits.

Ask your county agent about the right time to sow wheat to avoid the Hessian fly.

Timothy seeded alone in early September will produce a crop of clear timothy hay the following season.

Live Stock.

Silo-filling time.

Arrange for the fall farrowing of sows.

Prepare hog pens by careful cleaning and repairing.

Put pig rails or fenders firmly in position.

Poultry.

All hens not to be carried for another year should be culled and marketed before the end of this month; put pullets in their laying quarters as soon as room can be made for them.

Keep the pullets separate from the old hens so they may be fed and handled separately.

Put the henhouses in shape for winter; repair leaks in the roof, see that there are no holes or cracks in the back or sides to cause drafts, replace all broken windows, and put new cloth on the curtain fronts if needed. Give the whole house a thorough cleaning, including the walls and ceiling, and spray the whole interior with a good disinfectant, or whitewash it.

If the henhouse has a dirt floor remove the top 3 or 4 inches and replace with fresh dry earth, sod, or gravel.

Look out for crowding in the young stock. Crowding is apt to lead to the development of colds.

Farm Operations.

Take down awnings while they are dry and store for winter; leaving them exposed to the weather when they are not needed shortens their life. (See Farmers' Bulletin 1157.)

What is so rare as a perfect thrashing machine? Farmers' Bulletin 991 explains efficient operation of thrashers.

The corn binder saves time but does not materially reduce the cost of harvesting corn as compared with hand cutting. (Farmers' Bulletin 992.)

Most red-clover seed should be cut this month. If the weather is wet don't forget to turn the windrows, so that the seed will not sprout and spoil. In the South red clover may be seeded for a winter crop.

Harvest hemp for fiber. (Michigan, Wisconsin, and California.)

Fall-sown oats outyield the spring-sown crop in the Southeastern States. They also provide a winter cover for the land and some pasture for stock. Fulghum and Red Rustproof are the best varieties. (See Farmers' Bulletin 1119.)

For fall-sown grains which follow grass or another grain crop in the humid areas, plow 5 to 8 inches deep several weeks before seeding time, and keep down weeds and volunteer grain by disking and harrowing. Land on which a cultivated crop, such as corn or potatoes, was grown usually can be prepared by disking and harrowing instead of plowing. In any case have the surface fine and mellow for 2 or 3 inches and the subsoil firm. (See Farmers' Bulletins 596 and 885.)

Marketing.

Good beef steers usually sell at the highest price of the year.

Hog prices generally reach highest point of the year, and receipts are generally lightest.

Bureau of Crop Estimates issues a summary of condition and forecast, on September 1, of certain crops.

Woods Work.

Be on the watch for fires in the woods this dry month and next; they destroy trees and impoverish the soil.

Wild Life.

This is the season of wild fruits, and therefore of plenty for birds; your farm will be doing its share to feed the birds if you have left some of the native fruit-bearing shrubbery along fence rows and roadsides. A thoroughly cleaned up place is almost a desert for birds.

Eradicate pocket gophers from alfalfa fields and orchards before winter. (See Farmers' Bulletin 932.)

September 16 is the first day of the open season on migratory waterfowl and Wilson snipe in the United States. Remember that Federal law prohibits the hunting or shooting of migratory game birds from sunset to half an hour before sunrise; that bag limits are prescribed for the various species; that sale is prohibited; that guns larger than 10 gauge may not be used; and that it is unlawful to hunt from a power boat, sailboat, or boat under sail, or from an airplane. Have you obtained your State hunting license? Secure a copy of your State game laws as well as a game-law bulletin from the department.

It is a relatively easy matter to clear out rats and mice while your corncribs are empty and to adopt simple measures to ratproof the cribs.

Home.

Before you buy that next pair of shoes learn how to pick out serviceable ones and how to take care of them. (See Farmers' Bulletin 1183.)

Look after your fire-prevention equipment. (See Farmers' Bulletin 904.)

By wise choice you may have better food at less cost. Farmers' Bulletins 807, 817, and 824 tell how to select foods.

Autumn is the time to protect ornamental plants from injury by disease during

the following year: Prune out and burn all diseased shoots of woody perennials. Spray with a dormant spray; remove and burn all diseased annuals and also all perennials having diseased crowns. For specific information in reference to the care of roses, see Farmers' Bulletin 750, entitled "Roses for the Home."

September Days.

2. Overhaul chimneys, furnaces, and stoves.
4. Prevent or control fires in the woods in this month and the next.
5. Labor Day.
8. Keep lambs on fresh pasture and keep rams away from ewe lambs.
9. Veal calves usually sell highest this month.
12. Fall migration of birds is on in the Northeast. Department Bulletin 185 has interesting facts about bird migration. Some travel 10,000 miles.
13. Like mushrooms? Farmers' Bulletin 204 tells how to grow them.
15. See that corncribs are free of rats and mice, and that they are made rat proof before corn gathering begins. See Farmers' Bulletin 896.
16. Get acquainted with your county agent; you will like him. The man we don't like is the man we don't know.
17. Fall plowing is a most effective way of controlling insect pests, because it exposes grubs and pupæ to sun and air.

20. Make it a point to tell your county commissioners or supervisors what you think of the agricultural extension work. As public officers, they want your opinion about it.
23. Help your boys and girls to get interested in club work, sometimes known as "junior projects."
24. Stable manure as a top dressing to pastures is offensive to stock; better put off applying it to used pastures until late fall or early winter.
25. First forest reservation created in California by Congress, 1890.
26. A day's work with a buzz or drag saw will yield as much firewood as could be cut in many days of hard work by hand.
28. Louis Pasteur, founder of germ theory of disease and method of treatment by inoculation with attenuated virus, died, 1895.
30. Running water in the house and a drain for carrying off waste save the housekeeper many steps, many hours, and many aches.

Plow deep and straight with all your powers.—Horne.

Being ignorant is not so much a shame as being unwilling to learn.—Benjamin Franklin.

Save seed corn enough for three years. Don't lose your adapted variety. You can't get far by starting anew every few years. (Farmers' Bulletin 773.)

Farm Business Reminders.

Breeding Dates, Payments, Meetings, Etc.



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.			
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)		Sow.	Ewe.	Cow.	Mare.
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.				
1	Sa	h. m. 5 53	h. m. 5 46	h. m. 5 54	h. m. 5 45	h. m. 5 56	h. m. 5 44	h. m. 5 57	h. m. 5 42	Jan. 23	Feb. 28	July 8	Sept. 6
2	S	5 53	5 45	5 55	5 44	5 56	5 42	5 58	5 40	24	Mar. 1	9	7
3	M	5 54	5 44	5 56	5 42	5 58	5 40	6 00	5 38	25	2	10	8
4	Tu	5 55	5 43	5 56	5 41	5 58	5 39	6 01	5 36	26	3	11	9
5	W	5 55	5 41	5 57	5 39	6 00	5 37	6 02	5 34	27	4	12	10
6	Th	5 56	5 40	5 58	5 38	6 00	5 35	6 03	5 32	28	5	13	11
7	Fr	5 56	5 39	5 59	5 36	6 02	5 34	6 05	5 31	29	6	14	12
8	Sa	5 57	5 38	6 00	5 35	6 02	5 32	6 06	5 29	30	7	15	13
9	S	5 58	5 37	6 00	5 34	6 04	5 31	6 07	5 27	31	8	16	14
10	M	5 58	5 36	6 01	5 33	6 05	5 29	6 08	5 25	Feb. 1	9	17	15
11	Tu	5 59	5 34	6 02	5 31	6 06	5 28	6 10	5 23	2	10	18	16
12	W	6 00	5 33	6 03	5 30	6 07	5 26	6 11	5 22	3	11	19	17
13	Th	6 00	5 32	6 04	5 29	6 08	5 24	6 12	5 20	4	12	20	18
14	Fr	6 01	5 31	6 04	5 27	6 09	5 23	6 14	5 18	5	13	21	19
15	Sa	6 01	5 30	6 05	5 26	6 10	5 22	6 15	5 16	6	14	22	20
16	S	6 02	5 29	6 06	5 25	6 11	5 20	6 16	5 15	7	15	23	21
17	M	6 03	5 28	6 07	5 23	6 12	5 18	6 18	5 13	8	16	24	22
18	Tu	6 04	5 27	6 08	5 22	6 13	5 17	6 19	5 11	9	17	25	23
19	W	6 04	5 26	6 09	5 21	6 14	5 16	6 20	5 09	10	18	26	24
20	Th	6 05	5 25	6 10	5 20	6 15	5 14	6 21	5 08	11	19	27	25
21	Fr	6 06	5 24	6 10	5 19	6 16	5 13	6 23	5 06	12	20	28	26
22	Sa	6 06	5 23	6 11	5 17	6 17	5 11	6 24	5 04	13	21	29	27
23	S	6 07	5 22	6 12	5 16	6 18	5 10	6 26	5 03	14	22	30	28
24	M	6 08	5 21	6 13	5 15	6 19	5 09	6 27	5 01	15	23	31	29
25	Tu	6 08	5 20	6 14	5 14	6 21	5 07	6 28	5 00	16	24	Aug. 1	30
26	W	6 09	5 19	6 15	5 13	6 22	5 06	6 29	4 58	17	25	2	Oct. 1
27	Th	6 10	5 18	6 16	5 12	6 23	5 05	6 31	4 57	18	26	3	2
28	Fr	6 11	5 17	6 17	5 11	6 24	5 03	6 32	4 55	19	27	4	3
29	Sa	6 11	5 16	6 18	5 10	6 25	5 02	6 34	4 54	20	28	5	4
30	S	6 12	5 15	6 19	5 08	6 26	5 01	6 35	4 52	21	29	6	5
31	M	6 13	5 14	6 20	5 08	6 27	5 00	6 36	4 51	22	30	7	6

Local mean solar time of sunrise and sunset (sun's upper limb), meridian of Greenwich. To obtain the standard time at any station, increase the local time by the number of minutes the station is west of the standard meridian (longitude west of standard meridian expressed in minutes divided by 15), or decrease the local time by the number of minutes the station is east of the standard meridian. (From the American Ephemeris and Nautical Almanac, 1921.)

Phases of the Moon, Seventy-fifth Meridian Time.

New moon, 1st, 7.26 a. m.; first quarter, 8th, 3.12 p. m.; full moon, 16th, 6 p. m.; last quarter, 23d, 11.32 p. m.; new moon, 30th, 6.39 p. m.

Partial eclipse of the moon; eclipse begins 3.01 p. m., 16th; middle of eclipse, 5.54 p. m., 16th; eclipse ends 8.46 p. m., 16th; only the latter part of the eclipse is visible in the United States.

**"From a clear sunset I can always borrow
God's sweet half promise of a fair tomorrow."**

October.



SERIOUS preparation for winter marks OCTOBER, but it is a good month for work; its brisk days carry a zest not known to other months. The season ends with a rush and there are many tasks. A day's hunting may give "pep" to tackle duties almost too insistent. Many things can be done now to relieve the strenuousness of the next spring.

October, misty bright, the touch is thine
That the full year to consummation brings,
When noonday suns and nightly frosts combine
To make a glory that outrivals spring's.

—John Campbell Shairp.

October Weather.

Temperatures below zero have been experienced at a few points in the North Central States in October, the lowest of record at a regular Weather Bureau station being 16° below zero in northern Montana. Freezing temperatures have occurred nearly to the Gulf coast. On the average, killing frost occurs by the end of the month as far south as the northern portions of South Carolina, Georgia, Alabama, and Mississippi, and the central portions of Arkansas and Oklahoma.

In most districts east of the Rocky Mountains precipitation is considerably less in October than in September, the most noteworthy diminution occurring in the lower Missouri and upper Mississippi Valleys, in the Great Plains States, and in the east Gulf coast districts. Rains usually become more frequent, however, in the Pacific Coast States, the average amount for the month in some localities in the northern section being as much as 10 inches, and heavy snows fall in the higher mountains.

Fruit.

The eggs of the fall cankerworm are laid in fall. Apply to tree trunk a band of sticky material or cotton batting in October to prevent females from laying eggs up in the tree. These bands will need to be renewed in the spring to prevent the ascent of newly hatched caterpillars. Plowing in the late summer will kill many pupæ in the soil.

Live Stock.

National Dairy Show held at Chicago.

Feed sows and litters carefully. Have pigs in thrifty growing condition before cold weather begins. Castrate pigs during the latter part of this month or early next month.

Poultry.

All pullets should be moved to their laying quarters by the last of this month. Allow from 3 to 4 square feet of floor space for each pullet.

Farm Operations.

Creameries and large dairies can cut fuel bills by using their exhaust steam from the engine for heating water, milk, and cream; for sterilizing, and for warming the building. Some establishments save a fifth to a third of their coal bills in this way. Information furnished on request by Dairy Division, Department of Agriculture, Washington, D. C.

Look over your wagon covers to see if they are in condition for the winter's hauling. Farmers' Bulletin 1157 tells you how to waterproof them.

Experience shows that hog cholera occurs especially during the autumn months. If you find any hogs hidden in the nest which arch their backs and appear to be chilled when you make them get up, suspect hog cholera. Call a competent veterinarian. Have the serum treatment administered if it is cholera.

Hog cholera is highly contagious and spreads quickly. Infection is carried by persons, animals, streams, and so on. Burn diseased carcasses to ashes or bury them 4 feet deep. Keep pens and lots

clean. Permit no trespassing during outbreaks. Hogs can be made immune from cholera only by the preventive serum treatment. For further information apply to the Bureau of Animal Industry, Department of Agriculture.

In the Northern States the close grazing of meadows by sheep late in the fall often results in serious winterkilling, thereby reducing subsequent hay yields.

Select typical heads of sorghum for seed.

Pasture off beet tops in fields previously harvested if the ground is not too soft. Silo the beet roots for next year's seed crop. (North Central States.)

Harvest the cane and sorghum crops. (Gulf States.)

To control European corn borer, destroy all dry vegetation. Bury corn-stalks rejected by cattle deeply in fresh manure, horse manure if possible. (Oct. 15 to May 1). Observe the quarantine regulations and consult Farmers' Bulletin 1046.

Marketing.

Several important Jewish fast days come in this month, and adversely affect fresh-meat trade.

Average weight of veal calves highest.

Lambs usually sell lowest with lowest average weights of sheep and lambs and receipts of sheep heaviest.

Range-cattle movement usually at its height.

Bureau of Crop Estimates issues last regular cotton condition report of the season. A crop summary, as to condition on October 1, or at time of harvest of principal crops, is issued.

Woods Work.

At the beginning of the rainy season carry on fall planting or seeding operations of forest trees. The oaks, hickories, and walnuts can be sown directly in the ground in the fall, provided rodents are not too numerous, with more assurance of success than with spring sowing.

Wild Life.

Now the hunting season is on, see to it that bobwhites are not exterminated on your land. Most small birds are protected both by State and Federal laws.

Inspect orchards and vineyards to detect the presence of rabbits, meadow mice, or pine mice. Make mouse poisoning a regular part of your orchard practice and see that tree protectors are in place and in good condition. (See Farmers' Bulletins 670 and 702.) Rabbits may be reduced in numbers by trapping and shooting. The mice may be killed by using poisoned sweet potato for pine mice or poisoned grain for meadow mice.

Home.

When your shoes and boots get soaked be careful how you dry them. Dry them slowly; never let them get hotter than your hand can stand; wet leather burns before you know it.

Cake making is not "pure luck." A half-pint measuring cup (glass or metal) for measuring the flour and sugar, and a standard set of measuring spoons for measuring the butter and baking powder will help in following a new recipe.

Capacity of Irrigation Ditches.

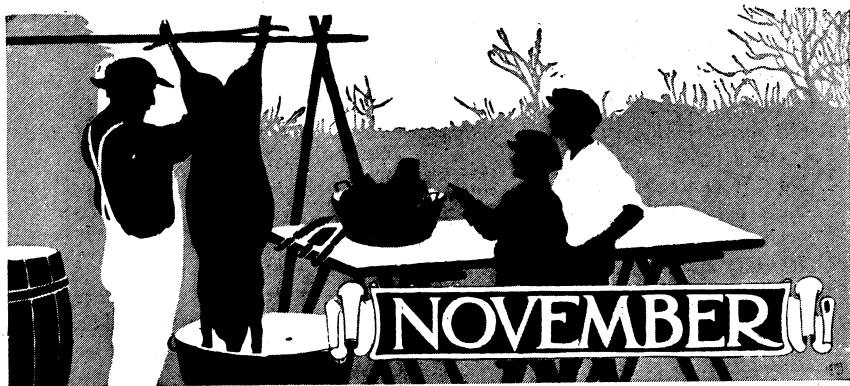
The following table shows the amount of water which farm irrigation ditches of various sizes and slopes will carry:

Bottom width of ditch.	Depth of water.	Grade.	Capacity.
<i>Inches.</i>	<i>Inches.</i>	<i>Feet per 100.</i>	<i>Cubic feet per sec.¹</i>
14	5	0.25	0.67
14	5	.51	.93
14	5	.63	1.05
14	5	1.01	1.35
16	6	.13	.80
16	6	.25	1.00
16	6	.38	1.30
16	6	.76	1.80
16	6	.88	2.00
24	9	.06	2.08
24	9	.13	3.00
24	9	.25	4.20
24	9	.38	5.20

¹ 1 cubic foot per second equals 450 gallons per minute.

- ## Farm Business Reminders.

(41)



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.			
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)					
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.				
1	Tu	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	Feb. 23 24 25 26 27	Mar. 31 1 2 3	Aug. 8 9 10 11 12	Oct. 7 8 9 10 11
2	W	6 14	5 14	6 20	5 06	6 28	4 58	6 38	4 49				
3	Th	6 14	5 13	6 21	5 06	6 30	4 57	6 39	4 48				
4	Fr	6 15	5 12	6 22	5 04	6 31	4 56	6 40	4 46				
5	Sa	6 16	5 11	6 23	5 04	6 32	4 55	6 42	4 45				
6		6 17	5 10	6 24	5 03	6 33	4 54	6 43	4 44	Mar. 1 2 3 4 5 6	28 5 6 7 8 9 10 11	13 14 15 16 17 18 19	12 13 14 15 16 17 18 19
7	S	6 17	5 10	6 25	5 02	6 34	4 53	6 44	4 42				
8	M	6 18	5 09	6 26	5 01	6 35	4 52	6 46	4 41				
9	Tu	6 19	5 08	6 27	5 00	6 36	4 51	6 47	4 40				
10	W	6 20	5 08	6 28	4 59	6 38	4 50	6 49	4 39				
11	Th	6 21	5 07	6 29	4 58	6 39	4 49	6 50	4 37	12 13 14 15 16 17 18 19	20 21 22 23 24 25 26 27	28 29 30 31 1 2 3 4	26 27 28 29 30 31 1 2
12	Fr	6 22	5 06	6 30	4 58	6 40	4 48	6 51	4 36				
13	Sa	6 22	5 06	6 31	4 57	6 41	4 47	6 53	4 35				
14	S	6 23	5 05	6 32	4 56	6 42	4 46	6 54	4 34				
15	M	6 24	5 05	6 33	4 56	6 43	4 45	6 56	4 33				
16	Tu	6 25	5 04	6 34	4 55	6 44	4 44	6 57	4 32	17 18 19 20 21 22 23 24 25 26	27 28 29 30 31 1 2 3 4 5 6	32 33 34 35 36 37 38 39 40 41	42 43 44 45 46 47 48 49 50 51
17	W	6 26	5 04	6 35	4 54	6 46	4 44	6 58	4 31				
18	Th	6 26	5 03	6 36	4 54	6 47	4 43	7 00	4 30				
19	Fr	6 27	5 03	6 37	4 53	6 48	4 42	7 01	4 29				
20	Sa	6 28	5 02	6 38	4 53	6 49	4 41	7 02	4 28				
21	S	6 29	5 02	6 39	4 52	6 50	4 41	7 04	4 27	22 23 24 25 26 27 28 29 30 31	32 33 34 35 36 37 38 39 40 41	42 43 44 45 46 47 48 49 50 51	52 53 54 55 56 57 58 59 60 61
22	M	6 30	5 02	6 40	4 52	6 51	4 40	7 05	4 26				
23	Tu	6 31	5 02	6 41	4 51	6 52	4 39	7 06	4 26				
24	W	6 31	5 01	6 42	4 51	6 54	4 39	7 08	4 25				
25	Th	6 32	5 01	6 43	4 50	6 55	4 38	7 09	4 24				
26	Fr	6 33	5 01	6 44	4 50	6 56	4 38	7 10	4 23	27 28 29 30 31	32 33 34 35 36	42 43 44 45 46	52 53 54 55 56
27	Sa	6 34	5 01	6 45	4 50	6 57	4 37	7 11	4 23				
28	S	6 35	5 00	6 46	4 49	6 58	4 37	7 13	4 22				
29	M	6 36	5 00	6 47	4 49	6 59	4 37	7 14	4 22				
30	Tu	6 36	5 00	6 48	4 49	7 00	4 36	7 15	4 21				
31	W	6 37	5 00	6 48	4 49	7 01	4 36	7 16	4 21	24	29	6	4

Local mean solar time of sunrise and sunset (sun's upper limb), meridian of Greenwich. To obtain the standard time at any station, increase the local time by the number of minutes the station is *west* of the standard meridian (longitude west of standard meridian expressed in minutes divided by 15), or decrease the local time by the number of minutes the station is *east* of the standard meridian. (From the American Ephemeris and Nautical Almanac, 1921.)

Phases of the Moon, Seventy-fifth Meridian Time.

First quarter, 7th, 10.54 a. m.; full moon, 15th, 8.39 a. m.; last quarter, 22d, 6.41 a. m.; new moon, 29th, 8.26 a. m.

**"A southerly wind and a cloudy sky
Proclaim it a hunting morning."**

November.



UPPLIES for the winter are stored or sold by now. One can begin to look back and to plan ahead. If neighborhood activities need stirring up, help get them under way, calling on the agricultural college extension service or on the Federal Department of Agriculture for assistance, but make sure that there is an active local interest first.

I find sweet peace in depths of autumn woods,
Where grow the ragged ferns and roughened moss;
The naked, silent trees have taught me this—
The loss of beauty is not always loss!

—Elizabeth Stoddard.

November Weather.

The normal temperature for November in most sections of the country is from 10° to 15° lower than for October. Cold waves of considerable severity occasionally occur in the North Central States during this month, but they usually lose force rapidly in their eastward and southward progress. Freezing weather has occurred as far south as Tampa, Fla., during this month, but zero temperatures have never been recorded south of the Ohio River and central Missouri. Killing frost does not as a rule occur south of the central portions of Oklahoma and Arkansas and the northern portions of the east Gulf States until after November 1.

Precipitation has less local character. On the Pacific coast the rainy season becomes more pronounced, this being the month of maximum precipitation in some of the northern districts. The average snowfall for the month in extreme northern Michigan and interior New York is about 15 inches, while in the mountains of the West snowfall may be heavy.

Plans.

November is a good time to pause and take reckoning. Study your business of the year with *Farmers' Bulletin 1139*, which explains a method of analyzing the farm business.

Study best methods of storage and preservation of garden products.

At the end of the season's work with any implement it is a good plan to make

out a schedule of needed repairs and adjustments for that particular machine and file it in a convenient place, so that when opportunity arises the work may be taken up and prosecuted expeditiously.

Fruit.

The only sure remedy against round-headed and flat-headed apple-tree borers is to dig out the borers by means of a wire and knife in the fall, winter, or spring.

Live Stock.

Keep ewes in thrifty condition. When pastures give out, supply a reasonable amount of feed.

Teach boys and girls vital points regarding care and management of live stock in winter.

Prepare winter quarters for the hogs. Have them tight, light, clean, warm, and comfortable. Kill the meat hogs and prepare the meat products for home use. Wean the fall pigs.

International Live Stock Exposition held at Chicago.

Poultry.

Cull and market any pullets which are extremely late, are slow growers, or are very immature. Immature, late-hatched pullets are likely to develop colds and spread it through the flock.

Provide a good litter of straw on the henhouse floor to make the fowls exercise for their grain feed.

Provide sufficient roosting room. Allow 7 to 10 inches of roost, depending on the size of the birds.

Feed a good, balanced laying ration. Be sure that the mash contains some

meat scrap or other animal feed; also provide some form of green feed and grit and oyster shell.

Farm Operations.

Get tank heater in shape for drinking water for live stock.

Drag earth, sand-clay, and gravel roads before they freeze and they will remain in good condition during the winter.

More than \$100,000,000 worth of farm property is lost in this country every year from fire and lightning. A large part of this loss is preventable. Safeguard property and prevent needless loss as well as danger to yourself and your family. (See Farmers' Bulletin 904 and Department Bulletin 530.)

It is best to use all available shed room, but not to build expensive sheds just to house implements through the winter. A special shelter that adds more than 15 per cent to the total machinery investment is ordinarily not profitable. Even out in the weather, a machine with plenty of grease on its bearings is better off than one standing under an open shed without the grease. (Department Bulletin 338.)

It is time now to build or repair the ice house. Ordinarily, from a half ton to 1 ton of ice per year is needed for cooling the cream from each cow; and 1½ to 2 tons of ice for cooling the whole milk. About 45 cubic feet of space should be allowed for storing a ton of ice.

Begin hauling and spreading manure and plowing for next year's sugar-beet crop. (California.)

Thrash beet and sorghum seed, and if soil and weather conditions permit, haul and spread manure and plow for next year's beet crop. (Mountain, Intermountain, and North Central States.)

Continue harvesting the cane crop and select and bank the cane for next season's planting. (Gulf States.)

Destroy cotton plants after crop is harvested to kill the boll weevil.

Marketing.

Heaviest mortality of sheep and lambs in transit.

Average weight of all hogs going to market usually is lightest.

Sheep frequently sell lowest.

Wild Life.

This month is a favorable time to arrange for a carefully planned poisoning campaign against coyotes. It will pay you to get in touch with the local representatives of the Biological Survey or with your State officials who are cooperating in this work. If you contemplate trapping fur animals this winter, you should be familiar with the laws protecting them. Ask for your copy of the annual bulletin of the Department of Agriculture on the Laws Relating to Fur-Bearing Animals.

Home.

In cold weather ice for the table may be frozen in an old pan. Pouring hot water over the pan will loosen the cake. Snow may be used in place of ice in the ice-cream freezer.

Clean milk is the foundation of the child's diet. Every growing child should consume at least a pint and a half daily.

Use Fruit.

Fruit is food. It supplies some sugar and the important mineral matters, mild fruit acids, and vitamins. It helps to keep your body in good health and to prevent constipation.

Use fresh fruit when you can get it. Can any surplus you may have. Apples, pears, plums, peaches, cherries, oranges, grapefruit, grapes, bananas, avocados, berries—the list is very long. Somewhere in the United States some of them are always in season, and some are in market everywhere a good part of the time.

Approximate Composition of Manure from Different Farm Animals.

Below is given the approximate content of the principal plant-food elements in a ton of manure. Manure should be stored so that all liquid as well as solid portions are kept, as the liquid often has the greater fertilizer value. Unless kept in good storage, manure should be hauled to the fields as soon as produced. The phosphoric acid in ordinary farm manure is low as compared with ammonia and potash, and a reinforcement with at least 50 pounds of acid phosphate per ton is desirable. Fine rock phosphate can often be used to advantage with the beddings.

Animal manure.	Composition (pounds per ton).		
	Ammonia.	Phosphoric acid.	Potash.
Cow, solid and liquid . . .	12	4	8.5
Horse, solid and liquid . . .	15	5	9.5
Pig, solid and liquid . . .	14	7	8.2
Sheep, solid and liquid . . .	19	7	17.0
Hen	26	17	8.2

November Days.

1. First regular issue of weather bulletins by United States Signal Service begun, 1870.
2. Clover seed will be hulled by now; better reclean the seed.
4. Fence posts cut and peeled last spring are seasoned and ready for preservative treatment.
6. Cure beef from November to April in cool weather. (See Farmers' Bulletin 183.)
8. Waterproof shoe soles not only add to your comfort and good health but also reduce your shoe bills. (Farmers' Bulletin 1183.)
11. Dr. Seaman A. Knapp appointed the first agent for boys' corn club work in Holmes County, Miss., 1907.
13. Begin winter feeding of birds; see that they never come in vain. Suet and sunflower seeds are good.
16. Highest record price of corn, 1917—\$2.40.
17. Study your farm business with the aid of Farmers' Bulletin 1139.
20. Is the ice house built or repaired for the coming harvest?
22. Make the cows a present of a heater to take the chill off the drinking water.
24. Thanksgiving Day.
25. Give the children plenty of the kinds of food they should eat and you will not have to worry much about the kinds they should not eat.
29. Gen. Horace Capron, Commissioner of Agriculture, appointed, 1867.
30. Any hen that has not molted and is still laying is a valuable breeder to improve the flock's egg production.

Farm Business Reminders.

Breeding Dates, Payments, Meetings, Etc.



Day of month.	Day of week.	Sunrise and sunset.								Gestation table.					
		Lat. 30° N. (Jacksonville, New Orleans, Houston.)		Lat. 35° N. (Charlotte, Memphis, Amarillo, Needles.)		Lat. 40° N. (Philadelphia, Columbus, Denver, Red Bluff.)		Lat. 45° N. (Eastport, Alpena, St. Paul, Portland.)							
		Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Rises.	Sets.	Sow.	Ewe.	Cow.	Mare.		
		<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>	<i>h. m.</i>						
1	Th	6 38	5 00	6 49	4 48	7 02	4 36	7 17	4 20	Mar. 25	Apr. 30 May 1	Sept. 7	Nov. 6		
2	Fr	6 39	5 00	6 50	4 48	7 03	4 35	7 19	4 20					8	7
3	Sa	6 40	5 00	6 51	4 48	7 04	4 35	7 20	4 20					9	8
4	S	6 40	5 00	6 52	4 48	7 05	4 35	7 21	4 19	28	3	10	9		
5	M	6 41	5 00	6 53	4 48	7 06	4 35	7 22	4 19	29	4	11	10		
6	Tu	6 42	5 00	6 54	4 48	7 07	4 35	7 23	4 19	30	5	12	11		
7	W	6 43	5 00	6 54	4 48	7 08	4 35	7 24	4 18	31	6	13	12		
8	Th	6 43	5 00	6 55	4 48	7 09	4 35	7 25	4 18	Apr. 1	7	14	13		
9	Fr	6 44	5 00	6 56	4 48	7 10	4 35	7 26	4 18		8	15	14		
10	Sa	6 45	5 01	6 57	4 49	7 10	4 35	7 27	4 18		9	16	15		
11	S	6 46	5 01	6 58	4 49	7 11	4 35	7 28	4 18	4	10	17	16		
12	M	6 46	5 01	6 58	4 49	7 12	4 35	7 29	4 18	5	11	18	17		
13	Tu	6 47	5 01	6 59	4 49	7 13	4 35	7 30	4 19	6	12	19	18		
14	W	6 48	5-02	7 00	4 50	7 14	4 35	7 30	4 19	7	13	20	19		
15	Th	6 48	5 02	7 00	4 50	7 14	4 36	7 31	4 19	8	14	21	20		
16	Fr	6 49	5 02	7 01	4 50	7 15	4 36	7 32	4 19	9	15	22	21		
17	Sa	6 50	5 03	7 02	4 50	7 16	4 36	7 33	4 20	10	16	23	22		
18	S	6 50	5 03	7 02	4 51	7 16	4 37	7 33	4 20	11	17	24	23		
19	M	6 51	5 04	7 03	4 51	7 17	4 37	7 34	4 20	12	18	25	24		
20	Tu	6 51	5 04	7 03	4 52	7 18	4 37	7 34	4 20	13	19	26	25		
21	W	6 52	5 04	7 04	4 52	7 18	4 38	7 35	4 21	14	20	27	26		
*22	Th	6 52	5 05	7 04	4 53	7 19	4 38	7 36	4 22	15	21	28	27		
23	Fr	6 53	5 05	7 05	4 53	7 19	4 39	7 36	4 22	16	22	29	28		
24	Sa	6 53	5 06	7 05	4 54	7 20	4 40	7 36	4 23	17	23	30	29		
25	S	6 54	5 06	7 06	4 54	7 20	4 40	7 37	4 23	18	24	Oct. 1	30		
26	M	6 54	5 07	7 06	4 55	7 20	4 41	7 37	4 24	19	25	2	Dec. 1		
27	Tu	6 54	5 08	7 07	4 55	7 21	4 41	7 38	4 24	20	26	3	2		
28	W	6 55	5 08	7 07	4 56	7 21	4 42	7 38	4 25	21	27	4	3		
29	Th	6 55	5 09	7 07	4 57	7 21	4 43	7 38	4 26	22	28	5	4		
30	Fr	6 55	5 10	7 07	4 57	7 22	4 43	7 38	4 27	23	29	6	5		
31	Sa	6 56	5 10	7 08	4 58	7 22	4 44	7 38	4 28	24	30	7	6		

Local mean solar time of sunrise and sunset (sun's upper limb), meridian of Greenwich. To obtain the standard time at any station, increase the local time by the number of minutes the station is *west* of the standard meridian (longitude west of standard meridian expressed in minutes divided by 15), or decrease the local time by the number of minutes the station is *east* of the standard meridian. (From the American Ephemeris and Nautical Almanac, 1921.)

Phases of the Moon, Seventy-fifth Meridian Time.

First quarter, 7th, 8.20 a. m.; full moon, 14th, 9.51 p. m.; last quarter, 21st, 2.54 p. m.; new moon, 29th, 12.39 a. m.

* Winter solstice. (Winter commences.)

“Year of snow, Fruit will grow.”

December.



CLAIMING first attention comes indoor work in house and barn. While special tasks need doing, this is a month for cultivation of the faculties rather than of the fields, and for thoughts of one's relationships with one's fellow man. The spirit of peace and good will should be a natural outgrowth of this period of contemplation.

These winter nights, against my window pane
Nature with busy pencil draws designs
Of ferns and blossoms and fine spray of pines,
Oak-leaf and acorn and fantastic vines,
Which she will make when summer comes again.

— T. B. Aldrich.

December Weather.

During December cold waves are generally more frequent and severe, and very cold weather is occasionally experienced in the interior of the country. The lowest temperature of record at a regular Weather Bureau station during this month is 50° below zero in northern Montana. Along the central and east Gulf coast the average date of the first killing frost of the season is about December 1.

Little precipitation occurs, as a rule, during December in the Great Plains States and at the lower altitudes of the Rocky Mountain and plateau districts. In the Pacific Coast States the rainy season is ordinarily well established in all districts, the central and northern portions receiving more precipitation during the month than is received by any other section of the country, and heavy snow is frequent over the elevated mountain sections. Thunderstorms are rare in this month in the northern portion of the country.

Plans.

Begin planning next year's work.

The great value of a cost account is that it enables the farmer to study his individual enterprises and determine which is actually paying a good profit and which is not.

Fruit.

Remove the eggs of the tent caterpillar at the time of winter pruning from December to April.

Live Stock.

Keep the rams away from the ewes and avoid late, unprofitable lambs.

Begin breeding sows for spring litters. Immunize fall litters. Feed well for the purposes intended and keep bred sows gaining slightly in weight throughout the winter.

Poultry.

Provide good ventilation in the hen-house by making use of the curtain front or the windows. Hens can stand cold better than dampness.

Watch for colds or any sign of sickness. Remove any sick bird and put a disinfectant in the drinking water.

Gather eggs frequently to prevent freezing.

Farm Operations.

Perhaps on cold mornings you will want a copy of Farmers' Bulletin 1013, Hints on Running a Gas Engine.

Break and scutch hemp and flax.

When other farm work is slack is a good time to clear that stump land.

Suggestions for Home Butchering.

Cleanliness is a most important factor in butchering and curing meats. Meat very easily becomes tainted.

Save all pieces of meat. There are many ways of converting them into a palatable product.

All waste fat, trimmings, and skin should be rendered and the product used to make soap.

Bones should be crushed or ground for chicken feed.

Never put meat in cure before the animal heat is out of it.

Always pack meat skin side down when in the curing process, except the top layer in a brine cure, which should be turned flesh side down.

Keep close watch on the brine, and if it becomes "ropy," change it.

Do not forget to turn or change meat several times during the curing process.

The fat of dry-cured meat sometimes becomes yellow, but that does not make it unwholesome.

It takes more time to smoke dry-cured than brine-cured pork.

Slow smoking is much better than rapid smoking, and there is less chance of causing the meat to drip. (See Farmers' Bulletin 913.)

Marketing.

Bureau of Crop Estimates issues annual estimate of the cotton crop, and annual review of crop acreages, production, and values.

This is usually the month of lowest average hog prices, heaviest hog packing, and of greatest mortality among cattle in transit to markets.

Wild Life.

Jack rabbits in many sections of the West destroy great quantities of growing grain, and during the winter feed upon the crowns of alfalfa and upon the hay in stack. Drives against these animals result in the protection of crops and forage. Get in touch with the department's representative in this work, to kill out these animals if they are abundant in your community.

Join your neighbors in a crusade against house rats and mice. Rats and mice come in from fields and from buildings which are cold and lacking in food. Stop up all means of access to your buildings and destroy these rodents; make this a community affair and organize a concerted fight.

The skins of fur animals will soon be prime, and should receive proper care; they are valuable. Get a copy of Department Circular 135, Maintenance of the Fur Supply.

The last day of the open season on waterfowl and Wilson snipe in Massachusetts, West Virginia, Kentucky, Missouri, Kansas, Colorado, Nevada, and States north is December 31. If you haven't received your copy of the annual game law bulletin of the Department of Agriculture, write for it to-day. It's free.

A special feature of winter feeding of birds where there is a heavy snowfall is the feeding of bobwhites or quail. Low-thatched hutches or wigwams of corn-stalks, with grain scattered inside, will save many a bird. In severe weather, especially with crusted snow, it will pay to hunt up coveys and feed them in their retreats, in which they sometimes remain and perish from hunger and cold.

Home.

Department Bulletin 530 tells about farmers' mutual fire insurance companies.

Cook pork well to avoid danger of trichinosis, a disease caused by trichinae, microscopic parasites of swine. Especially during the Christmas holidays, when the pork products are likely to be served, the danger should be recognized.

The farm is the kitchen's first line of defense. See Farmers' Bulletin 1082 on home supplies furnished by the farm.

How to Wash Ribbons.

Spread the ribbon flat on a smooth, hard surface like a table top or a marble slab and sponge or brush with lukewarm water in which a little mild soap has been dissolved. Rinse by holding the ribbon stretched between the hands and passing it through a bowl of clear water of the same temperature. Dry by spreading it out straight and flat on a smooth, hard surface. Draw the hand gently over it to press out air bubbles which may have formed under the ribbon and would make it look "blistered" when dry.

December Days.

1. *Plan now to attend the annual Farmers' Week at your State college.*
2. *Write the Department of Agriculture for bulletins on farm accounting.*
3. *First American silo opened at Billerica, Mass., 1879.*
4. *The best foods for children are listed in Farmers' Bulletin 717. The right food means strong bodies and quick minds.*
6. *Begin breeding sows for spring litters.*
9. *Use care in cutting Christmas trees; improve the woodlot or pasture and get a profit in money.*
14. *New Mexico Agricultural Experiment Station organized under Hatch Act, 1889.*
15. *First wireless market report sent out, 1920.*
16. *Nebraska Agricultural Experiment Station organized, 1884.*
18. *Motion-picture work of Department of Agriculture authorized, 1913.*
19. *Do your Christmas shopping with a definite purpose; don't be lured into purchases you have not planned.*
21. *To overheat a house is a wasteful and unthrifty practice.*
25. *Christmas Day.*
30. *The last day of the open season on waterfowl in many Northern States is tomorrow. A true sportsman does not violate the game laws.*
31. *American Society of Agronomy organized, 1907, at Chicago, Ill.*

Important Fertilizer Materials.

The chief commercial materials used in fertilizer practice, and the principal sources of ammonia, of phosphate, and of potash, and the composition of each, for the guidance of the farmer in selecting his fertilizing materials.

Fertilizer material.	Composition (per cent).		
	Ammonia.	Phosphoric acid.	Potash.
Ammonia carriers:			
Nitrate of soda.....	19	.....	.....
Sulphate of ammonia.....	25	.....	.....
Cyanamid.....	20-25	.....	.....
Dried blood.....	12-16	.....	.....
Tankage, high grade.....	12-14	2-4	.....
Fish scrap, dried.....	8-11	5-7	.....
Cottonseed meal.....	7-8	2-3	2-2.5
Phosphoric-acid carriers:			
Acid phosphate.....	.....	14-16	.....
Basic slag.....	.....	16-18	.....
Ground bone.....	2.5-5	21-25	.....
Finely-ground rock phosphate.....	.....	28-34	.....
Potash carriers:			
Muriate of potash.....	.....	.....	50
Sulphate of potash.....	.....	.....	50
Kainit.....	.....	.....	12
Nebraska salts.....	.....	.....	22-26

In putting garments away for the season, guard against wrinkling, stretching, fading, and insects. Send to the Department of Agriculture for publications giving methods of controlling moths and other household insects.

Are your time, money, labor, and land worth anything? Don't waste them on poor seed.

Farm Business Reminders.

Breeding Dates, Payments, Meetings, Etc.

Farm Helps.

Something About Farm Laws.

In the absence of a State statute defining what constitutes a sufficient fence, the rule is that a fence which will turn ordinary stock is sufficient. It is not necessary that it turn stock which are peculiarly vicious or prone to break fences.

Division Fences.

In the absence of a State statute requiring the fencing of one's property, the erection and maintenance of a division fence, as a general rule, are subjects of contract and agreement between adjoining owners, and all the rights and liabilities of the parties are to be determined by such contract or agreement.

At common law every man was bound at his peril to keep his live stock on his own land. Failing to do so he was liable, whether the lands trespassed upon were fenced or not. This rule has been changed by statute or judicial decisions in many States.

Trespassers.

One who trespasses after being warned not to do so either verbally or by printed sign is, in many States by statute, guilty of a criminal offense. One posting his land should be careful to comply as to the size and character of posters prescribed by his State law; otherwise the poster will not be deemed sufficient warning.

Tenancy.

State laws differ so widely with regard to the obligations of landlord and tenant that it is impracticable to formulate any general rule. The laws of the particular State in which a question relating to landlord and tenant arises should be consulted.

Game Laws.

Wild game does not belong to the owner of the land on which it is found. The rule is universal that, subject to paramount Federal authority, it belongs to the people of the State in their united capacity, and its hunting and disposition may be regulated by the legislature as it may see fit. The owner of the land has no right to hunt wild game on his land except as permitted by State or Federal law. He has a right absolutely to forbid anyone else hunting on his land at any season.

Pursuant to treaty with Great Britain, Congress enacted what is known as the migratory bird treaty act of July 3, 1918. The act of Congress applies to both migratory game and nongame birds, and no one should hunt them without ascertaining and complying with the law and the regulations of the Department of Agriculture applying to them. State laws can not confer a right to hunt migratory birds contrary to the Federal law and regulations.

Marketing.

When selling grain in interstate commerce, sell it in accordance with the official grades fixed by the Secretary of Agriculture pursuant to the United States grain standards act.

Certificates issued by authorized agents of the Department of Agriculture as to the quality and condition of grain, hay, vegetables, fruits, butter, poultry, and other perishable farm products are prima facie evidence in all courts of the United States as to the truth of the statements therein contained.

Store your grain, tobacco, or cotton in warehouses licensed by the Secretary of Agriculture and bonded pursuant to the United States warehousing act.

Useful Figures in Ice Harvesting.

Number of cakes of various thicknesses required per ton of ice (size of cake, 22 by 22 inches):

Thickness of ice.	Number of cakes required per ton.	Cutting space required per ton.	Thickness of ice.	Number of cakes required per ton.	Cutting space required per ton.
Inches.		Sq. ft.	Inches.		Sq. ft.
4	31.3	105.4	14	8.9	30.1
6	20.9	70.2	16	7.8	26.3
8	15.6	52.6	18	6.9	23.4
10	12.5	42.1	20	6.3	21.1
12	10.4	35.1	22	5.7	19.1

Capacity of Ice Houses.

A cubic foot of ice weighs about 57 pounds. In storing ice it is customary to allow from 40 to 50 cubic feet per ton for the mass of ice, but the quantity that an ice house of a given size will hold depends upon the manner in which the ice is stored. Generally a cubic foot of an ice house will hold the quantities given below.

	Pounds.
Ice thrown in at random, about.....	30 to 35
Ice thrown in in irregular pieces and broken sufficiently to pack closely.....	35 to 40
Ice piled loosely.....	40 to 45
Ice piled closely and with very slight crevices between.....	45 to 50

Inside dimensions of insulated ice houses for various quantities of ice:

Quantity of ice.	Length.	Width.	Height.
Tons.	Feet.	Feet.	Feet.
10	10	7	7
20	14	8	8
25	14	10	8
30	14	10	10
40	18	10	10
50	16	12	12

Table for Finding Areas Drained by Tile Drains.

Size of tile.	Fall of drain in 100 feet.							
	1½ inches.	2½ inches.	3½ inches.	4½ inches.	6 inches.	9 inches.	12 inches.	24 inches.
	Area drained.							
Inches.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
4	4	5	7	8	9	10	12	18
5	7	10	12	14	16	20	23	32
6	12	17	21	24	27	33	39	55
7	19	27	33	38	42	52	59	84
8	28	39	48	56	62	75	87	122
10	51	71	88	101	113	140	161	223
12	86	119	147	171	190	232	268	379

Homemade Stock Feed.

The stock and condimental feeds that are generally bought on the market, which are represented to be conditioners, tonics, and fatteners, have for their foundation simple and well-known drugs and feeds. If a tonic or feed is desired, one of known composition may be mixed at home with entirely satisfactory results. The following two formulas are suggested:

I.		II.	
	Pounds.		Pounds.
Glauber salt.....	2	Glauber salt.....	5
Soda.....	1	Saltpeter.....	1½
Salt.....	1	Fenugreek.....	1
Fenugreek.....	½	Gentian.....	2
Linseed meal.....	25	Linseed meal.....	50

A heaping tablespoonful of one of the above mixtures fed with the grain 3 times a day is sufficient.

When a tonic is needed it is advisable to investigate why it is needed. The horse should receive daily attention regarding feed, water, salt, exercise, grooming, sanitation, and comfortable quarters. Neglect of any of these factors is usually an underlying cause of the poor condition of an animal.

Distances Traveled in Plowing 1 Acre.

The distance is—	Miles.
With a 10-inch plow.....	9.9
With a 12-inch plow.....	8.2
With a 14-inch plow.....	7.1
With a 16-inch plow.....	6.2
With a 24-inch plow.....	4.1
With a 28-inch plow.....	3.5
With a 42-inch plow.....	2.4

A one-horse plow covers about 1 acre per day; a two-horse walking plow covers from 1½ to 2 acres a day; gang plow, cutting 28 inches and drawn by four or five horses, with one man, covers from 4½ to 5 acres per day. Which do you use?

Number of Feet of Tile Required to Drain 1 Acre of Land for Different Spacings.

Spacing:	Number of feet of tile.
40 feet apart.....	1,089
50 feet apart.....	872
60 feet apart.....	660
80 feet apart.....	545
100 feet apart.....	436
125 feet apart.....	349
150 feet apart.....	291
200 feet apart.....	218

Number of Plants Required to Set an Acre of Ground at the Distances Specified.

6 by 8 inches.....	130,680
8 by 8 inches.....	98,110
15 by 15 inches.....	27,878
18 by 18 inches.....	19,360
12 by 30 inches.....	17,424
15 by 30 inches.....	13,939
24 by 24 inches.....	10,890
24 by 36 inches.....	7,260
3 by 3 feet.....	4,840
3 by 4 feet.....	3,630
3 by 6 feet.....	2,420
4 by 4 feet.....	2,722
4 by 6 feet.....	1,815
5 by 5 feet.....	1,742
6 by 6 feet.....	1,210
8 by 8 feet.....	680
10 by 10 feet.....	435
10 by 15 feet.....	290
12 by 12 feet.....	302
12 by 15 feet.....	242
15 by 15 feet.....	193
18 by 18 feet.....	134
20 by 20 feet.....	108
24 by 24 feet.....	75
30 by 30 feet.....	48
36 by 36 feet.....	33
40 by 40 feet.....	27

Rates of Seeding per Acre.

Bur Clover and Vetches.

Bur clover (hulled seed).....	15 pounds.
Bur clover (in the hull).....	5 bushels.
Hairy vetch.....	30 pounds.
Narrow-leaved vetch.....	30 pounds.
Woolly podded vetch.....	40 pounds.
Common vetch.....	80 pounds.
Purple vetch.....	80 pounds.

Lawn Mixture.

Lawn-grass seed mixture for the United States except the Southern States: 16 pounds Kentucky bluegrass, 3 pounds re-cleaned redtop, 1 pound white clover; sow at the rate of 75 to 100 pounds per acre.

Do not buy mixed lawn-grass seeds. Buy the seeds separately and mix them as desired.

Pasture Mixtures for the Northeastern States.

Well-drained land:	Pounds.
Kentucky bluegrass.....	8
Orchard grass.....	8
Redtop.....	3
White clover.....	2
Wet lands:	
Redtop.....	6
Meadow fescue.....	6
Alsike clover.....	4

Pasture Mixtures for the South.

Well-drained bottom lands:	Pounds.
Bermuda grass.....	2
Lespedeza.....	10
Sandy Coastal Plain:	
Carpet grass.....	5-10
Dallis grass.....	3
Lespedeza.....	5

Timothy and redtop are the best grasses for high mountain-meadow pasture areas in the West.

Bromus inermis (smooth brome-grass) and perennial rye-grass are the best grasses for low mountain-pasture areas in the West.

Redtop and alsike clover are the best pasture crops for wet land and pasture areas in general.

Soy Beans and Cowpeas.

Kind of seed.	Drilled or broadcast.	Rows 24 to 40 inches apart.
	Pounds.	Pounds.
Soy bean.....	60-90	25-40
Cowpea.....	75-90	30-40

Poor seed is dear at any price.

Rates of Seeding for Cereals.

[Numbers in parentheses refer to Farmers' Bulletins that tell about these crops.]

Crop.	North Atlantic States.	North Central States.	Southern States.	Great Plains and Rocky Mountain and Pacific States.	
				Dry-farm areas.	Humid and irrigated areas.
	Pounds per acre.	Pounds per acre.	Pounds per acre.	Pounds per acre.	Pounds per acre.
Barley.....	72- 96 (968)	72- 96 (968)	72- 96 (968)	36- 72 (968)	72-120 (968)
Buckwheat.....	36- 60 (1062)	36- 60 (1062)			
Corn.....	7- 10	7- 10	6- 8	5- 8	7- 10
Flax.....		20- 30 (785)		15- 25 (785)	
Oats.....	64- 96 (892)	64- 96 (892)	48- 80 (1119)	48- 80 (892)	64-128 (892)
Rice.....			65-100 (1092)	90-120 (1141)	
Rye.....	70-100 (756)	70-100 (756)	42- 84 (894)		
Sorghums, grain.....				2- 5 (1137)	
Wheat, spring.....	75-120	75-120		45- 90 (878)	90-150 (1103)
Wheat, winter.....	75-120 (596)	75-120 (596)	75-105 (885)	30- 75 (895)	75-120 (1103)

The North Atlantic States include those from Maine southward to Maryland and Virginia; the North Central States, those from Michigan, Ohio, and Kentucky westward to the eastern edge of the Great Plains, including eastern Kansas, eastern Nebraska, and eastern North and South Dakota; the Southern States, those from Virginia southward and westward to eastern Oklahoma and eastern Texas; and the Great Plains and Rocky Mountain and Pacific States the remainder of the United States.

In the humid areas rates of seeding for the small grains may vary within wide ranges without material change in yields. In general, sowing less than the lowest rate shown in the table will result

in decreased yields, while no increase will be obtained from sowing more than the highest rate. On the dry farms in the Great Plains and Rocky Mountain and Pacific States the rate of seeding varies largely with rainfall, less seed being sown where the rainfall is light. With corn and the grain sorghums, which are usually planted in rows about 3½ feet apart, the rates given are sufficient to obtain the desired stands in plants per acre. With corn the rate of planting necessarily varies widely with the size of the kernel, the size of stalk, the productiveness of the land, etc. Corn in the South is usually planted rather thickly and thinned to the desired stand.

Average Recognized Weights of Seed in a Bushel of the Common Forage Crops.

Name of seed:	Weight per bushel (pounds).
Alfalfa.....	60
Red clover.....	60
Alsike clover.....	60
White clover.....	60
Crimson clover.....	60
Hairy vetch.....	60
Common vetch.....	60
Field pea.....	60
Cowpea.....	60
Soy bean.....	60
Velvet bean.....	60
Timothy.....	45
Orchard grass.....	14
Redtop (re-cleaned).....	40
Kentucky bluegrass.....	22
Canada bluegrass.....	22
Meadow fescue.....	24
Smooth brome-grass.....	14
Bermuda grass.....	35
Tall oat-grass.....	10
Perennial rye-grass.....	20
Italian rye-grass.....	20
Creeping bent-grass.....	16
Foxtail.....	48-50
Sorghum.....	50-58
Millet.....	50
Johnson grass.....	28
Reed canary grass.....	44-48
Sheep's fescue.....	12
Red fescue.....	13
Sudan grass.....	32-40

Homemade Hog Tonic.

Experienced hog feeders have asserted that a mixture of charcoal, ashes, lime, salt, sulphur, and copperas kept where hogs can eat it will tend to prevent worm infestation. Though there is no positive experimental evidence in support of this idea, the mixture is of value as a source of mineral matter in the diet and perhaps as an appetizer and tonic. Following is a formula:

Charcoal.....	1 bushel.
Hardwood ashes.....	1 bushel.
Salt.....	8 pounds.
Air-slaked lime.....	4 pounds.
Sulphur.....	4 pounds.
Pulverized-copperas.....	2 pounds.

Mix the lime, salt, and sulphur thoroughly and then mix with the charcoal and ashes. Dissolve the copperas in 1 quart of hot water and sprinkle the solution over the whole mass, mixing it thoroughly. Keep some of this mixture in a box before the hogs at all times, or place in a self-feeder.

For additional facts on the care and management of swine, ask for Farmers' Bulletin 874.

How Long Does It Take?

This table shows how much time it takes, on the average, to do the ordinary farm jobs, over the country as a whole:

[A work day is 10 hours of man or horse labor.]

Operations.	Work days.	
	Man.	Horse
Production of crops (per acre):		
Timothy, alfalfa and clover hay, per cutting.....	1	1
Oats, wheat, barley, rye, buck-wheat, and millet.....	2	3
Corn husked from standing stalks.....	2	4.5
Corn husked from shock, or for silo.....	5	5.5
Corn for silo, Central States.....	3	5.5
Corn husked, Southern States.....	4	
Sorghum cut for hay.....	3	
Irish potatoes, Northern States.....	11	10
Irish potatoes, Southern States.....	13	7
Sweet potatoes.....	10	5
Sugar beets.....	6	10
Sugar cane for sirup, Georgia.....	16	7
Tobacco, Kentucky.....	35	3
Cotton.....	13	6
Peanuts (harvested), Georgia.....	5	3
Peanuts (hogged off), Georgia.....	3	2
Watermelons, Georgia and Florida.....	5	4
Field Beans.....	4	5.5
Rice, Louisiana, Arkansas, and Texas.....	3.5	5.5
Cabbage, Northern States.....	13	12
Cabbage, Southern States.....	20	8
Onions, Texas (sold by crate).....	68	14
Onions, Ohio, grown from sets (sold in bunches).....	93	10
Onions, Ohio, grown from seed (sold in bunches).....	149	10
Tomatoes, Northern States.....	15	11
Tomatoes, Florida.....	17	7
Cucumbers, Florida.....	32	10
String beans, Florida.....	22	7
Radishes, Ohio (sold in bunches).....	45	5
Beets and carrots, Ohio, (sold in bunches).....	82	8
Strawberries, Florida.....	74	9
Citrus fruits, Southern States.....	10	7
Apples.....	15	5
Caring for live stock (per year, except feeding steers and feeding sheep):		
Horses, corn-belt States.....	8	.75
Horses, Eastern States.....	12	.75
Dairy cows.....	18	2
Young stock, cattle, colts, etc.....	2.5	.2
20 Feeding steers per month.....	2	1.5
10 hogs, corn-belt States.....	10	2
10 hogs, Eastern States.....	20	2
10 brood sows and raising pigs to weaning.....	30	5
100 ewes.....	50	5
100 feeding sheep, yard lots, per month.....	3.5	3
100 chickens (well cared for).....	20	2

Whitewash the Inside of the Stable.

Make the whitewash as follows:

1 pint of water to 2 pounds of quicklime.

4 parts of water to 1 part of the slaked lime.

Mix thoroughly, keep covered until ready to use and then add water till it is of the right thickness.

This is well suited for dairies and dairy barns.

Period of Incubation.

The period of incubation varies with different species of poultry, as shown in the following table:

Kind of poultry.	Days.	Kind of poultry.	Days.
Hen.....	21	Peafowl.....	28
Pheasant.....	22-24	Guinea fowl.....	26-28
Duck.....	28	Ostrich.....	42
Duck (Muscovy).....	33-35	Goose.....	30
Turkey.....	28	Pigeon.....	17

The period of incubation varies somewhat with conditions, so that a hatch may run one or two days over in some cases, because of an accident during incubation or a low temperature throughout that period, or it may come off earlier. If through any accident the eggs are chilled or overheated, it is advisable to continue the hatch, testing the eggs after a few days to determine the extent of the damage.

To Determine the Quantity of Hay in a Rick.

Generally, 512 cubic feet of hay in stack or mow weigh 1 ton.

To determine with reasonable accuracy the number of tons of hay in a rick of a average shape, multiply the over (that is, the distance from the ground on one side to the ground on the other) by the width, then the length, and then by 0.37.

How Much Grain for Cows.

Have a properly balanced grain mixture; then feed it to each cow in proportion to her yield. Feed the cow 1 pound of grain mixture for every 3 pounds of milk she gives daily. A cow giving as much as 40 pounds a day can do with about 1 pound for every $3\frac{1}{2}$ or 4 pounds of milk. Another and better rule is to feed 1 pound of grain daily for every pound of butterfat the cow gives weekly.

Approximate Time Required to Produce Different Wood Crops.

Species.	Fence posts (6-inch trees).	Pulp-wood handle bolts; fuel (8-inch trees).	Ties (11-inch trees).	Poles and piling (14-inch trees).	Sawlogs (18-inch trees).
	Years.	Years.	Years.	Years.	Years.
Northern forests:					
Aspen.....	25-35	30-40	45-55	60-70	185-200
Beech.....	65-80	80-95	110-125	145-160	
Birch, paper.....	30-35	50-55			
Birch, yellow.....	45-55	60-70	75-85	100-110	130-140
Hemlock.....	25-40	35-50	50-65	65-80	85-100
Maple, sugar.....	55-70	70-85	90-105	110-125	145-160
Pine, jack.....	25-35	30-40	50-60	75-85	
Pine, red.....	15-25	25-35	30-40	40-50	55-65
Pine, white.....	25-35	35-45	50-60	65-75	90-100
Spruce, red.....	30-40	45-55	60-70		
Tamarack.....	50-60	45-55	110-120	160-170	
Central hard wood forests:					
Chestnut.....	15-25	25-35	30-40	45-55	65-75
Hickory, mockernut.....	40-50	50-60	70-80	90-100	110-120
Oak, black.....	25-35	35-45	45-55	75-85	125-135
Oak, red.....	25-35	35-45	45-55	60-70	100-110
Oak, white.....	30-40	40-50	55-65	90-100	150-160
Poplar, yellow.....	16-37	22-50	32-70	45-100	65-135
Farm timber plantations:					
Catalpa.....	25-30				
Larch, European.....	20-30	25-35	45-55		
Maple, silver.....	15-25	20-30	25-35		
Walnut, black.....	15-25	20-30	30-40		
Southern forests:					
Cottonwood.....	5-15	10-20	15-25	20-30	25-35
Ash, white.....	15-25	20-30	25-35	35-45	50-60
Cedar, red.....	25-35	35-45	50-60	65-75	
Cypress.....	15-25	20-30	25-35	35-45	40-50
Gum, red.....	10-20	15-25	15-30	20-30	30-40
Pine, loblolly.....	15-25	20-30	25-35	35-45	45-55
Pine, longleaf.....	20-30	25-35	45-55	65-80	90-110
Pine, scrub.....	15-25	20-30	30-40	40-50	50-60
Pine, shortleaf.....	10-20	15-25	20-30	25-35	55-65
Pine, slash.....	15-25	20-30	30-40	60-70	
Rocky Mountain forests:					
Fir, Douglas.....	20-30	25-35	30-40	45-55	60-70
Pine, lodgepole.....	35-45	50-60	75-85	150-160	
Pine, western yellow.....	25-40	35-50	45-60	60-75	80-100
Pacific coast forests:					
Fir, white.....	60-70	70-80	85-95	100-110	120-130
Hemlock, western.....		45-55	65-75	90-100	120-130
Pine sugar.....	35-45	45-55	60-70	70-80	100-110
Redwood.....	15-25	20-30	30-40	45-55	65-75

Which Fertilizers Can Be Mixed?

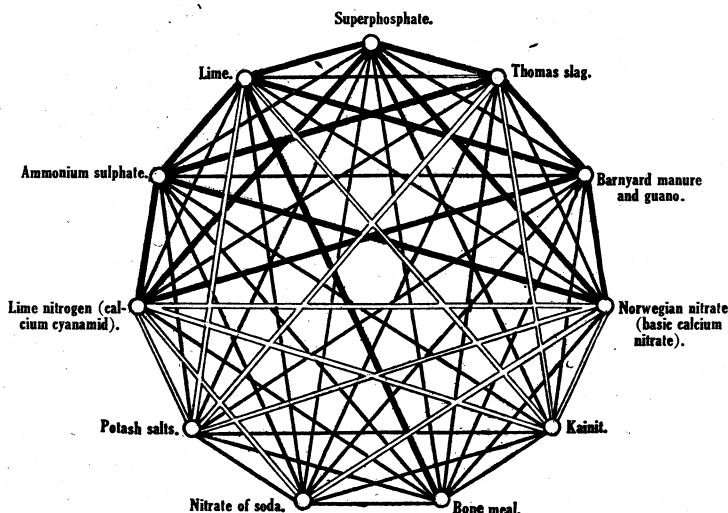


Diagram indicating what fertilizer materials may and may not be safely mixed. The dark lines unite materials which should never be mixed, the double lines those which should be applied immediately after mixing, and the single lines those which may be mixed at any time.

Home Mixing of Fertilizers.

Under the conditions prevailing in most parts of the country a decided saving can be made by substituting home-mixed fertilizers for the ready-mixed goods of commerce.

The following table will help in calculating home mixtures. In making ton lots, to get 1 per cent, use amounts shown in first column; for 2 per cent, use the second column, and so on.

Quantities of fertilizer ingredients to be used to give definite percentages in a ton of mixture.¹

Ingredient.	1 per cent.	2 per cent.	3 per cent.	4 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
Carriers of nitrogen (N):	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>
Nitrate of soda (15 per cent N).....	133	266	400	532	666	800	933	1,066	1,200	1,333
Sulphate of ammonia (20 per cent N)....	100	200	300	400	500	600	700	800	900	1,000
Cottonseed meal (7 per cent N).....	285	571	856	1,142	1,428	1,714	2,000	.....	.....	.....
Dried blood (10 per cent N).....	200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000
Phosphoric acid carriers (P₂O₅):										
Acid phosphate (12 per cent P ₂ O ₅)....	166	333	500	666	833	1,000	1,166	1,333	1,500	1,666
Acid phosphate (14 per cent P ₂ O ₅)....	142	285	428	571	714	856	1,000	1,142	1,285	1,428
Ground bone ² (23 per cent P ₂ O ₅)....	76	174	261	348	435	522	609	696	783	869
Potash carriers (K₂O):										
Potassium sulphate (50 per cent)....	40	80	120	160	200	240	280	320	360	400
Potassium chloride (50 per cent).....	40	80	120	160	200	240	280	320	360	400
Kelp ash (30 per cent K ₂ O).....	66	133	200	266	333	400	466	533	600	666
Nebraska lakes potash (22 per cent)...	90	180	270	360	450	540	630	720	810	900

¹ Where the combined materials do not total 2,000 pounds a filler may be used to bring up the mixture to that weight.

² Ground bone also carries nitrogen.

Example: To make up a 2-8-2 mixture using acid phosphate, nitrate of soda, and potassium sulphate, use 266 pounds of nitrate of soda, 1,142 pounds of 14 per cent acid phosphate, 80 pounds of sulphate

of potash; total, 1,488 pounds; make up total of 2,000 pounds with 512 pounds of ground limestone, dried peat, or muck or sand.

Highest Yearly Milk and Butterfat Records by Champion Cows of Five Dairy Breeds.

[December 1, 1920.]

Breed and individual.	Milk.	Butterfat.
	<i>Pounds.</i>	<i>Pounds.</i>
Ayrshire:		
Garelaugh May Mischie.....	25,329	955.56
Lily of Willowmoor.....		
Brown Swiss:		
College Bravura, 2d.....	19,460	798.16
Guernsey:		
Murne Cowan.....	24,008	1,103.28
Countess Prue.....		
Holstein-Friesian:		
Tilly Alcartra.....	33,425	1,205.09
Duchess Skylark Ormsby.....		
Jersey:		
Passport.....	19,695	1,040.07
Plain Mary.....		

Average Production by Dairy Cows.

Group.	Milk.	Butterfat.
	<i>Pounds.</i>	<i>Pounds.</i>
Average of the champion cows of 5 dairy breeds.....	24,383	1,019
Average of 40,000 cows in cow-testing associations.....	5,980	246
Average of all cows in United States, estimated by Dairy Division.....	4,000	160

How does your best cow and the average of your herd compare with these figures?

Air-Tight Lining for Silo.

To make a silo wall air-tight, coat it inside with paraffin. Dissolve 4 pounds of paraffin in half a gallon of naphtha or gasoline and put on with a paint brush. The naphtha quickly dries out, leaving the paraffin in the pores. One gallon of the mixture, made from 4 pounds of paraffin, will cover about 200 square feet. Do not smoke or have any sort of flame near this work or the naphtha vapor may explode. Be careful to have plenty of ventilation.

If preferred, the paraffin may be simply melted and painted on. It is necessary to do this on a hot day, and also to warm the silo wall with a blow torch. About 6½ pounds of paraffin will make a gallon when melted, and cover about 250 square feet. This method is good for a surface exposed to weather.

To Determine the Capacity of a Silo.

To find the capacity of a silo, multiply one-half the diameter, or one-half the width across, by the same figure, then by 3.1416, and this product by the height of the silo. If the measurements are in feet, this will give the number of cubic feet in the silo. Multiply the number of cubic feet by 35 (the average number of pounds of silage to the cubic foot) and divide by 2,000 to determine the number of tons. Farmers' Bulletin 855 tells about home-made silos.

Proportions of Salt and Water to Use in Cooking Cereals.

Cereal.	Amount of cereal.	Salt.	Water.
	<i>Cup.</i>	<i>Teaspoons.</i>	<i>Cups.</i>
Corn meal.....	1	1	3½
Hominy grits.....	1	2	4
Oatmeal (Scotch).....	1	1	2
Oatmeal (rolled oats).....	1	1	2½-3
Cracked wheat.....	1	1	4

Lime-Sulphur Solution.

Use formula A or B.

Formula A:

Fresh stone lime..... 50 pounds.
Commercial ground sulphur..... 100 pounds.
Water to make finished product.. 50 gallons.

Formula B:

Fresh stone lime..... 80 pounds.
Commercial ground sulphur..... 160 pounds.
Water to make finished product.. 50 gallons.

To make a 50-gallon batch of the lime-sulphur concentrate proceed in the following manner:

Place 10 gallons of water in the cooking vessel and start the fire or release the steam. Weigh out the lime and sulphur. The sulphur may be used dry, provided all the lumps are broken, or it may be made into a thin paste, and may be placed in the cooker before or after the lime has started to slake. When slaking is under way the materials must be stirred vigorously, and this agitation should be continued now and then throughout the boiling. Continue adding water, as required, until the lime is slaked; then, if cooking by fire, bring the contents up to 55 gallons and boil for 50 minutes to 1 hour. When steam is employed fill the cooker up to the 50-gallon mark. No excess water is needed since the condensation of the steam about equalizes the amount of water lost through evaporation. The finished product should measure 50 gallons.

For further details see Farmers' Bulletin 908.

Spray Dilution Table for Ready Reference.

The rate at which the materials have been computed will be found in the first column. The figures at the top of the table represent the total number of gallons of diluted spray desired, and the figures in the vertical columns give the amount of spray material required. Thus, if 150 gallons of arsenate of lead, paste, at the rate of 2 pounds to 50 gallons, is to be used, it will be noted in the table that 6 pounds is required. If 25 gallons of self-boiled lime-sulphur mixture is needed, the table shows that 4 pounds of stone lime and 4 pounds of sulphur should be used. Again, if 100 gallons of kerosene emulsion, 10 per cent strength, is wanted and the stock solution contains 66 per cent of kerosene, it will be found by referring to the table that 15 gallons of the stock emulsion should be used.

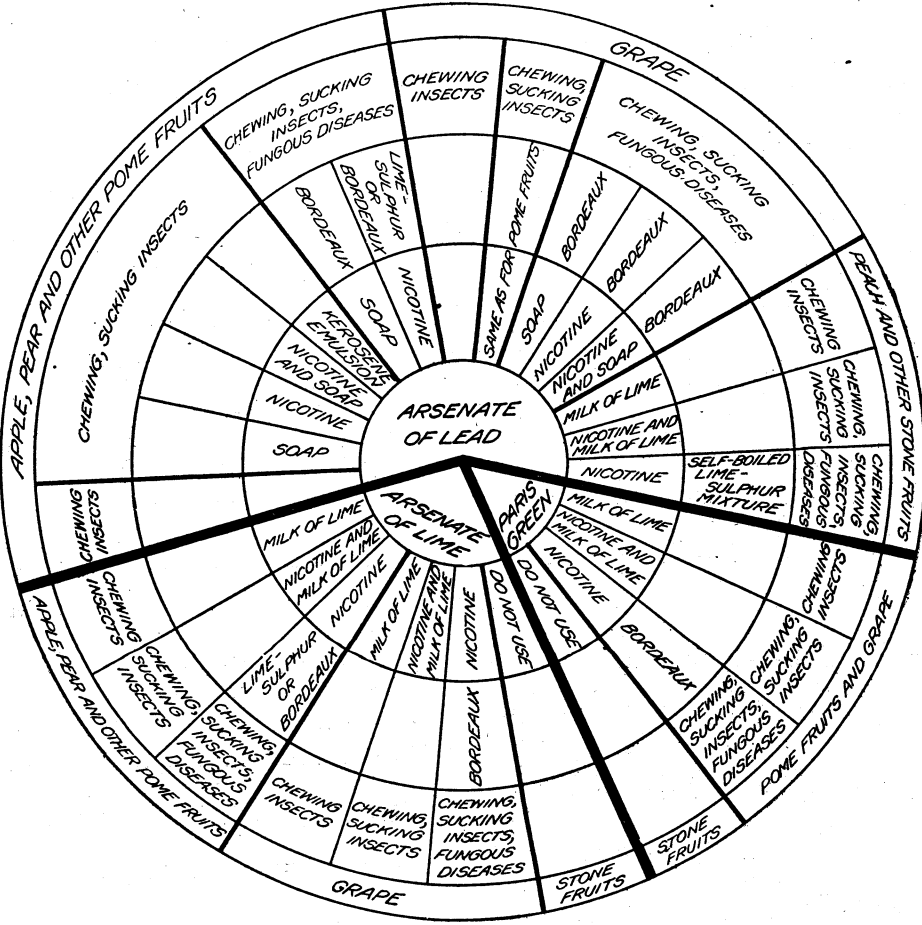
Spray Dilution Table.

Material.	Total gallons of diluted spray material.									
	200	150	100	50	25	20	15	10	5	1
(A) SPRAY MATERIAL AND USUAL RATE OF DILUTION FOR TREES IN FOLIAGE.										
<i>Stomach poisons.</i>										
Arsenate of lead, paste, 2 lbs. to 50 gals.....	8 lbs.	6 lbs.	4 lbs.	2 lbs.	1 lb.	12.8 oz.	9.6 oz.	6.4 oz.	3.2 oz.	0.64 oz. or 1 teaspoonful.
Arsenate of lead, powder, 1 lb. to 50 gals.....	4 lbs.	3 lbs.	2 lbs.	1 lb.	8 oz.	6.4 oz.	4.8 oz.	3.2 oz.	1.6 oz.	0.32 oz. or 3/4 teaspoonful.
Arsenate of lime, paste, 2 lbs. to 50 gals.....	8 lbs.	6 lbs.	4 lbs.	2 lbs.	1 lb.	12.8 oz.	9.6 oz.	6.4 oz.	3.2 oz.	0.64 oz. or 1 1/2 teaspoonfuls.
Arsenate of lime, powder, 1 lb. to 50 gals.....	3 lbs.	2.25 lbs.	1.5 lbs.	12 oz.	6 oz.	4.8 oz.	3.6 oz.	2.4 oz.	1.2 oz.	0.24 oz. or 2 1/2 teaspoonfuls.
Paris green, 6 oz. to 50 gals.....	1.5 lbs.	1.12 lbs.	12 oz.	6 oz.	3 oz.	2.4 oz.	1.8 oz.	1.2 oz.	0.6 oz.	0.12 oz. or 0.5 teaspoonful.
<i>Contact sprays.</i>										
Nicotine sulphate (40%), 1 to 800—1/4 pt. to 50 gals.	1 qt.	1.5 pts.	1 pt.	8 fl. oz.	4 fl. oz.	3.2 fl. oz.	2.4 fl. oz.	1.6 fl. oz.	0.8 fl. oz.	1 teaspoonful.
Nicotine sulphate (40%), 1 to 1,066—1/2 pt. to 50 gals.	1.5 pts.	1.12 pts.	12 fl. oz.	6 fl. oz.	3 fl. oz.	2.4 fl. oz.	1.8 fl. oz.	1.2 fl. oz.	0.6 fl. oz.	0.75 teaspoonful.
Kerosene emulsion (66%), 10% strength.	30 gals.	22.5 gals.	15 gals.	7.5 gals.	3.75 gals.	3 gals.	2.25 gals.	1.5 gals.	3 qts.	1.2 pints.
Fish-oil soap, 1 lb. to 4 gals.....				12.5 lbs.	6.25 lbs.	5 lbs.	3.75 lbs.	2.5 lbs.	1.25 lbs.	1/4 oz.
<i>Fungicides.</i>										
Lime-sulphur concentrate ¹ (33° B.), 1 1/2 gals. to 50 gals.	6 gals.	4.5 gals.	3 gals.	1.5 gals.	3 qts.	2.4 qts.	1.8 qts.	1.2 qts.	0.6 qt.	4 fl. oz.
Bordeaux mixture (4-4-50), stone lime, copper sulphate.	16 lbs.	12 lbs.	8 lbs.	4 lbs.	2 lbs.	1.6 lbs.	1.2 lbs.	0.8 lb.		
Self-bolled lime-sulphur mixture ¹ (8-8-50); stone lime, sulphur.	32 lbs.	24 lbs.	16 lbs.	8 lbs.	4 lbs.	3.2 lbs.	2.4 lbs.			
(B) SPRAY MATERIAL AND USUAL RATE OF DILUTION FOR DORMANT TREES.										
<i>Contact sprays.</i>										
Lime-sulphur concentrate (33° B.), 1 gal. to 8 gals.	25 gals.	18.75 gals.	12.5 gals.	6.25 gals.	3.12 gals.	2.5 gals.	1.87 gals.	1.25 gals.	2.5 qts.	1 pint.
Lime-sulphur concentrate (33° B.), 1 gal. to 9.5 gals.	21 gals.	15.75 gals.	10.5 gals.	5.25 gals.	2.62 gals.	2.1 gals.	1.57 gals.	1.05 gals.	2 qts.	0.84 pint.
Kerosene emulsion (66%), 25% strength.	76 gals.	57 gals.	38 gals.	19 gals.	9.5 gals.	7.6 gals.	5.7 gals.	3.8 gals.	1.9 gals.	3 pints.
Kerosene emulsion (66%), 20% strength.	60 gals.	45 gals.	30 gals.	15 gals.	7.5 gals.	6 gals.	4.5 gals.	3 gals.	1.5 gals.	3 pints.
Fish-oil soap, 2 lbs. to 1 gal.....	400 lbs.	300 lbs.	200 lbs.	100 lbs.	50 lbs.	40 lbs.	30 lbs.	20 lbs.	10 lbs.	2 1/2 lbs.

¹ Also serves as a contact spray during the summer season for newly hatched scale insects.

Abbreviations: oz.=ounce; lb.=pound; fl. oz.=fluid ounce; pt.=pint; qt.=quart; gal.=gallon. Weights: 16 ounces=1 pound. Measures: 7 teaspoonfuls=1 fluid ounce; 16 fluid ounces=1 pint; 32 fluid ounces=1 quart; 4 quarts=1 gallon.

Standard Spray Materials and Their Combinations for Summer Spraying.



Sprays that may be combined and plants that may be treated.

Orchards and vineyards are usually troubled with different classes of pests, as biting insects, sucking insects, and fungus diseases, each of which usually requires for its control a different kind of spray material. Fortunately it is possible to combine the necessary materials for the simultaneous control of the pests, thus avoiding separate applications.

In the figure are given the standard spray materials for chewing insects, sucking insects, and fungus diseases and the way in which they may be combined. It will be noted that there are three main divisions separated according to the principal stomach poisons in use: (1) Arsenate of lead; (2) arsenate of lime; and (3) Paris green. Each of these divisions is divided in accordance with the kind of fruit: Pome fruits, grape, and stone fruits. These, in turn, are subdivided into sections: (1) Chewing insects; (2) chewing and sucking insects; (3) chewing insects, sucking insects, and fungus diseases. These are further divided, when a choice of spray

material could be given. To make use of the diagram, the first consideration is the kind of fruit to be sprayed; next, the pests to be combated; and, finally, the choice of the spray materials.

If pome fruits, for example, are to be treated for chewing insects, arsenate of lead, arsenate of lime, or Paris green may be used: but, as will be seen in the diagram, milk of lime should be added to the latter two. If stone fruits are to be sprayed for chewing insects, nothing but arsenate of lead combined with milk of lime should be employed. Again, suppose apple trees are infested with chewing and sucking insects and that arsenate of lead is selected for the former, this arsenical may be combined with soap, or nicotine, or nicotine and soap, or kerosene emulsion. If apples are to be sprayed for both chewing and sucking insects and also fungus diseases and arsenate of lime is to be used for the chewing insects, nicotine should be added to it, and lime-sulphur or Bordeaux mixture.

Orchard Spraying.

Apple—Summer:

(1) *Cluster-bud*, or "*pink*" spray.—When the apples are in bud, showing the pink just before blossoming out, spray with lime-sulphur solution, 1½ gallons to 50 gallons of water, plus 1 pound of powdered arsenate of lead or 2 pounds of the paste.

(2) Use the same spray applied as soon as the petals have fallen and before the calyxes have closed.

(3) Use the same spray three to four weeks later.

(4) Use the same material as above, or where bitter-rot and blotch are prevalent use Bordeaux mixture (3-4-50) plus arsenate of lead. Where apple scab is not prevalent, the first application may be omitted. This results in the condensed routine spraying schedule, Nos. 2, 3, and 4. Where apple scab is very bad, a treatment may be required midway between the second and third application or 10 days after the second.

On any variety or in any district where bitter-rot is especially bad, two to three additional applications of Bordeaux mixture with or without the arsenate of lead are required for this disease. (For further details, see Farmers' Bulletin 492.)

Pear and quince—Summer:

Use the same schedule and materials as for the apple, ceasing with the fourth treatment.

Peach—Summer:

(1) Just as the calyxes, or shucks, are bursting from the fruit, spray with arsenate of lead powder 1 pound, or paste 2 pounds, to 50 gallons of water plus milk of lime from 2 to 4 pounds of stone lime.

(2) Spray two to three weeks later with self-boiled lime-sulphur (8-8-50) plus 1 pound of arsenate of lead powder or 2 pounds of the paste.

(3) Spray with self-boiled lime-sulphur four to five weeks before the fruit is due to ripen. Late varieties require an additional treatment between treatments 2 and 3. Peach leaf-curl is controlled by dormant spray with lime-sulphur solution or Bordeaux mixture. (For further details, see Farmers' Bulletin 440.)

Japanese plums—Summer:

Give the same treatment as for peach, except that soap should be added to the second and third applications to make the spray stick.

Cherries—Summer spraying:

Use the same schedule as for early peaches, except commercial lime-sulphur solution (1 gallon to 40 gallons of water) should be substituted for the self-boiled lime-sulphur. Where leaf-spot is very bad additional treatments may be required, sometimes after the fruit is picked. (See Farmers' Bulletin 1053.)

Plums, other than Japanese—Summer:

Use the same schedule as for peaches, except use commercial lime-sulphur solution (1-40) instead of self-boiled.

Grapes—Dormant spraying:

For neglected vineyards which have not been sprayed, apply lime-sulphur solution, winter strength, just before the buds open.

Grapes—Summer spraying:

(1) When the grapes are in bud just before the blossoms open, spray with Bordeaux mixture (4-3-50) plus arsenate of lead, 1 pound of powder or 2 pounds of paste.

(2) As soon as the blossoms fall, use Bordeaux mixture and arsenate of lead as above.

(3) Ten days later use the same materials.

(4) Two weeks later use Bordeaux mixture or neutral copper acetate (1-50). No arsenicals.

(5) Two weeks later use neutral copper acetate only in severe cases.

Treatment of Diseases Not Controlled by Spraying.

Pear-blight of the apple, pear, and quince:

Cut out the blight with a sharp knife and pruning tools, cutting well below the disease into the sound bark and wood. Disinfect the pruning tools with a 1 to 1,000 corrosive-sublimite solution and paint all wounds with coal-tar creosote tree paint.

On young trees or with mild cases on old trees, cut out the blight in summer as soon as it appears and keep cutting out the new cases.

On all pome fruits, cut out the blight in the fall as soon as the leaves are off, during the dormant period, and before the blossoms open in spring, giving special attention to the hold-over blight, using the same methods of disinfecting and painting.

In bad cases, practice moderation in pruning, cultivating, and fertilizing with nitrogenous manures and seed the orchard down to grass, clover, or cover crops.

Peach yellows, rosette, and little peach:

Inspect the orchard three or more times during the growing season, especially as the fruit is maturing. Condemn and promptly pull out and burn all trees showing symptoms of these diseases, no matter how slight. This is done for the benefit of the rest of the orchard.

There is no remedy for individual diseased trees. They are doomed to die and will infect the rest of the orchard if left standing.

Plum and cherry black-knot:

Prune out all knots, cutting, if possible, 6 inches or more in sound wood below the knot. Spray with Bordeaux mixture (5-5-50) in February or early March. Search for and destroy the knots on wild cherries and plums in fence rows and adjacent woods.

Crown-gall or hairy-root of the apple, pear, peach, plum, and other fruits:

Inspect nursery stock critically and avoid planting affected trees. There is no remedy for this disease as it occurs in the orchard. When found on young orchard trees 3 years old or younger, pull out and replant. It is not advisable to pull out mild cases in bearing orchards, since they may live and bear for several years, but very bad cases may be pulled out and replanted.

Fungicides, Formulas, and Dilutions.

Bordeaux mixture:

For use in the late spraying of apples, pears, and quinces and on garden vegetables. It should not be used for the spring and early summer spraying of apples, and especially on peaches or Japanese plums, on which it is injurious.

Dissolve 4 pounds of bluestone and dilute to about 25 gallons of water. Slake 4 pounds of stone lime and dilute with 20 to 24 gallons of water. Pour the two solutions simultaneously into a barrel, stirring thoroughly. This is called the 4-4-50 formula, the quantity of bluestone being mentioned first. Having left 1 to 5 gallons of space, add the arsenate of lead dissolved and diluted in 1 to 5 gallons of water, or, if desired, add the arsenate of lead dissolved and diluted and make up with 50 gallons of water. Other quantities of Bordeaux mixture are made up in the same proportion. Various strengths are used for different purposes, designated as 2-2-50, 2-3-50, 3-3-50, 5-5-50, etc.

Lime-sulphur solution:

The standard stock solution testing 33° Baumé is commonly on the market. It can also be made at home by boiling lime and sulphur together at the rate of 50 pounds of stone lime to 100 or 105 pounds of flour of sulphur. It should never be used on peaches or Japanese plums, nor on grapes, nor on vegetables.

For dormant spraying of all fruit trees, woody vines, and bush fruits it is diluted to a strength of 1 gallon of the solution to 8 or 9 gallons of water or 5 to 5½ gallons to a 50-gallon barrel.

For the summer spraying of the apple, pear, and quince it is used not stronger than 1½ gallons nor weaker than 1½ gallons to 50 gallons of spray.

On sour cherries, it is used at the rate of 1 to 40, and on sweet cherries at the rate of 1 to 50. It should never be used on peaches or Japanese plums.

Caution.—In case of proprietary mixtures make certain that they are lime-sulphur and not sodium-sulphur solutions, since the latter are more injurious, and arsenate of lead can be added to lime-sulphur but not to a sodium-sulphur compound.

Self-boiled lime-sulphur:

Add 8 pounds of flour of sulphur, moistened with water, to 8 pounds of slaking lime. Stir the sulphur into the lime, which should be slaked in a wooden vessel and kept covered for 5 to 10 minutes. This is called the 8-8-50 formula. Arsenate of lead may be added to this mixture for use on peaches and Japanese plums, to which it is nearly noninjurious. It is useful on other fruits, but not as strong as Bordeaux mixture or lime-sulphur solution.

Soap spreader:

Use 1 to 2 pounds of resin-fishoil soap preferably, or a laundry soap or some other cheap soap melted in hot water may be added to the Bordeaux mixture or the self-boiled lime-sulphur mixture, with

or without arsenate of lead. This greatly increases the spreading and sticking power of the application on smooth fruits and foliage. Soap should not be added to lime-sulphur solution, as it results in a sticky mass which can not be sprayed.

Neutral copper acetate:

A simple solution may be made by dissolving and diluting 1 pound of this salt in 50 gallons of water.

Coal-tar creosote tree paint:

Add one-third to one-fourth of creosote oil to two-thirds to three-fourths of ordinary coal tar. Use commercial materials and thin with the creosote to the consistency of a thick paint. This paint sometimes causes slight injury to the cut surfaces of cherries, peaches, and plums, though not enough to prevent its use. Painting the cut edges of the bark and adjacent sapwood with shellac before applying the coal-tar creosote tends to prevent injury.

How to Make Bordeaux Mixture.

	Large quantity.	Small quantity.
Bluestone (copper sulphate).....	pounds.. 4	{ounces.. 1
Quicklime (stone lime)....	do.... 4	{do.... 1
Water.....	gallons.. 50	{quarts.. 3

Dissolve the bluestone in half the water in a wooden tub or barrel. Slake the lime and dilute with the rest of the water. Pour these two dilute solutions together through a fine strainer and mix thoroughly. Bordeaux mixture should be used when fresh, because when old it is not good.

To avoid delay in dissolving bluestone and slaking lime each time Bordeaux mixture is needed, make stock solution of each, 1 pound to the gallon. Dilute 4 gallons of each with 21 gallons of water and pour together to make 50 gallons of Bordeaux mixture.

Formalin (Formaldehyde).

For treating seed potatoes, or soil, to prevent diseases.

Formalin... 1 pint....	} equivalent to—
Water..... 30 gallons.	
1 teaspoonful..	} or—
1 quart.....	
1 ounce.	
2 gallons.	

For onion-smut control, use 1 ounce per gallon of water.

Corrosive Sublimate (Mercuric Chlorid).

For treating potatoes, cucumber, cabbage, and other seeds to prevent diseases.

Corrosive sublimate..	1 part....	} equivalent to—
Water.....	100 parts..	
2 large tablets..	} or—	
1 quart.....		
1 ounce.		
8 gallons.		

Corrosive sublimate is a deadly poison.

Use only wooden or earthenware vessels, as metal containers are destroyed by it.

Whitewash.

Owing to the high cost of oil paints there is a temptation to use whitewash on buildings that have already been painted with oil. It is not advisable to do this, as whitewash does not adhere well to oil-painted surfaces. It should be applied to clean dry wood in order to obtain best results. If an oil-painted building needs repainting and the substitution and continued use of whitewash is desired, the old paint should be removed. For doing this use a paint remover or blow torch, removing the loosened paint with a scraper or steel brush. Cold-water paint, properly mixed, and applied in dry weather should last two years, is the cheapest of all paints, and for certain purposes is best. It is inadvisable to use whitewashes containing milk, flour, and glue on interior surfaces which are subject to dampness, as the organic substances are apt to decompose.

Ordinary whitewash is made by slaking quicklime in water. The lime should be placed in a pail or barrel and the water poured over it; the container should then be covered with a heavy cloth or board and allowed to stand for about one hour. If insufficient water is used the lime is not completely hydrated and becomes scorched. If too much water is added, the slaking action is retarded through lowering of the temperature. Scorched lime generally is lumpy; hence it is important that the proper amount of water be used in slaking and a subsequent addition of water made in order to produce the consistency proper for brushing.

Commercial hydrated lime may be used for making whitewash, but it is not so desirable as quicklime.

Lighthouse Whitewash.

- (1) Sixty-two pounds (1 bushel) quicklime; slake with 12 gallons of hot water.
 - (2) Twelve pounds rock salt; dissolve in 6 gallons of boiling water.
 - (3) Six pounds Portland cement.
- Pour (2) into (1), then add (3).

Government Formula.

Slake half a bushel of quicklime or lump lime with boiling water, keeping it covered during the process. Strain it and add a peck of salt dissolved in warm water; 3 pounds ground rice put in boiling water and boiled to a thin paste; half a pound of powdered Spanish whiting and a pound of clear blue, dissolved in warm water; mix these well together and let the mixture stand for several days. Keep the wash thus prepared in a kettle or portable furnace and when used put it on as hot as possible with a painter's or whitewash brush.

Alum added to a lime whitewash increases its adhesive quality. Use an ounce to the gallon.

Flour paste answers the same purpose, but a preservative such as zinc sulphate should be used.

Molasses renders the lime more soluble and causes it to penetrate more deeply the wood or plaster. Use a pint of molasses to a gallon of whitewash.

Silicate of soda solution (about 35° Baumé) in the proportion of 1 to 10 of whitewash produces a fire-resistive cement.

A pound of cheap bar soap dissolved in a gallon of boiling water and added to about 5 gallons of thick whitewash will impart a gloss like that of oil paint.

One man with a 5-inch brush should be able to coat the following surfaces in one hour:

	Sq.yds.	Sq.ft.
Rough stone walls.....	22	198
Smooth walls.....	38	342
Brick walls.....	20	180
Flat surfaces.....	40	
Ceilings where step ladder is used.....	25	

Fertilizing Value of Farm Products.

Many products on the farm have a distinct fertilizer value, either before or after being fed, and these are often used as soil builders or improvers, as in green manuring; or, in case of spoiled feed or hay, can be returned directly to the soil or composted.

Farm material.	Ammonia.	Phosphoric acid.	Potash.
	P. ct.	P. ct.	P. ct.
Alfalfa (green).....	0.70	0.15	0.50
Alfalfa hay.....	2.95	.50	2.10
Barley (green).....	.50	.15	.50
Barley straw.....	.70	.20	1.10
Bean, field:			
Hay.....	3.60	.65	2.00
Shells.....	2.00	.30	.35
Straw.....	1.55	.25	1.90
Buckwheat (green).....	.50	.10	.35
Buckwheat hay.....	.95	.60	2.40
Buckwheat straw.....	1.50	.15	1.15
Cabbage, refuse.....	.45	.10	.45
Clover:			
Alsike (green).....	.60	.12	.30
Alsike hay.....	2.50	.50	1.25
Crimson (green).....	.55	.12	.40
Crimson hay.....	2.50	.45	1.50
Red (green).....	.65	.13	.50
Red hay.....	2.50	.50	2.00
Sweet (green).....	.65	.15	.50
Sweet hay.....	2.40	.55	1.85
Cornstalks.....	.90	.40	.90
Cotton seed.....	3.80	1.25	1.15
Cowpea (green).....	.55	.12	.45
Cowpea hay.....	3.00	.55	1.75
Linseed meal.....	6.60	1.80	1.35
Hay, meadow.....	1.80	.40	1.35
Oat hay (green).....	.70	.15	.45
Oat straw.....	.70	.20	1.25
Peanut meal.....	9.00	1.30	1.50
Pea, field:			
Green.....	.60	.15	.50
Hay.....	2.40	.40	1.00
Straw.....	1.70	.35	1.00
Pomace:			
Apple.....	.25	.02	.15
Castor bean.....	6.60	2.25	1.15
Grape.....	1.15	.14	.63
Potato vines.....	.70	.15	.45
Rye (green).....	.55	.20	.65
Rye straw.....	.60	.30	.85
Soy bean (green).....	.60	.15	.60
Soy-bean hay.....	2.75	.70	1.10
Soy-bean straw.....	1.10	.30	.75
Timothy (green).....	.60	.25	.75
Timothy hay.....	1.50	.55	1.00
Tobacco stalks.....	4.45	.65	4.50
Tobacco stems.....	3.00	.90	7.00
Velvet bean (green).....	.65	.15	.55
Vetch, hairy:			
Green.....	.60	.10	.45
Hay.....	3.35	.75	2.30
Straw.....	1.20	.25	.65
Wheat straw.....	.60	.15	.60

Principal Commodities for which Bushel Weights have been Established by Law.

[illegible]

Not defined.

Former Secretaries of Agriculture.

Norman J. Colman.

NORMAN J. COLMAN was born on a farm near Richfield Springs, Otsego County, N. Y., May 16, 1827.

In 1852 he went to Missouri to live. He was an officer in the Civil War, a member of the assembly, and lieutenant-governor of Missouri.

On April 3, 1885, he became Commissioner of Agriculture. Congress established the work as an executive department February 11, 1889, with Mr. Colman as first Secretary. His work for agricultural experiment stations led to his being known as "the father of experiment stations."

He died at St. Louis, Mo., on November 3, 1911.

Jeremiah McLain Rusk.

JEREMIAH MCLAIN RUSK, second Secretary of Agriculture, was born in Morgan County, Ohio, June 17, 1830, on a farm.

In 1853 he moved to Wisconsin, was elected to the legislature in 1862, entered the Army, distinguished himself for bravery, and came out a brigadier general. He was successively Member of Congress and governor.

On March 7, 1889, he became Secretary of Agriculture and served until 1893, when he retired to his farm at Viroqua, where he died November 21, 1893.

Gen. Rusk recommended the publication of Farmers' Bulletins, and did much in other ways to popularize the publication of the results of research.

Julius Sterling Morton.

JULIUS STERLING MORTON, third Secretary of Agriculture, was born in Adams, N. Y., April 22, 1832.

In 1834 his parents moved to Michigan.

After newspaper work in Detroit and Chicago he took up a claim of public land in Nebraska, where he originated "Arbor Day," and gave Nebraska the name of "Tree-Planting State."

On March 7, 1893, Mr. Morton was appointed Secretary of Agriculture. He issued the first Yearbook of the department

and obtained the first appropriations for the Farmers' Bulletins recommended by his predecessor.

He died at Chicago, Ill., April 27, 1902.

James Wilson.

JAMES WILSON, fourth Secretary of Agriculture, was born in Ayrshire, Scotland, August 16, 1835. His family came to Connecticut in 1851, but soon moved to Iowa.

He was a member of the Iowa Legislature and of Congress, and in 1890 was made head of the agricultural work at Iowa State College.

He became Secretary of Agriculture on March 5, 1897, and served 16 years under McKinley, Roosevelt, and Taft—the longest term of any Cabinet officer. When he left, the working force had grown from 2,444 to 12,858. He sent men all over the world in search of new crops.

He died at Traer, Iowa, August 26, 1920.

David F. Houston.

DAVID F. HOUSTON was born in Monroe, N. C., February 17, 1866.

After graduating from South Carolina College in 1887 he took up educational work, and as an educator held many important posts. In 1902 he became president of the Agricultural and Mechanical College of Texas, in 1905 president of the University of Texas, and in 1908 chancellor of Washington University, St. Louis.

Appointed Secretary of Agriculture in 1913, Mr. Houston served until 1920, he became Secretary of the Treasury.

During Mr. Houston's term the study and dissemination of information concerning the marketing of agricultural products became a major activity of the Department, of correlative importance with production and protection of crops. This development of the marketing work has been followed by the enactment of many helpful laws providing for better methods of handling commodities, standardization in many lines, and general improvement in trading practices.

At Your Service.

WHAT'S your problem? Have you asked the county agent or the home demonstration agent? They know the views of the specialists of your agricultural college and the Government.

The answers to many of your questions can be found in the publications of the Department of Agriculture. This information is collected by experts, tested in practice, and published as fast as funds permit. Out of the five hundred and more Farmers' Bulletins now to be had for the asking there are sure to be some that will help you to overcome your particular difficulties and to add to the comfort and value of your farm.

Write for a list to Division of Publications, Department of Agriculture, Washington, D. C.

Here is the way the department works to serve you.

Office of the Secretary of Agriculture has charge of the executive and administrative work of the department.

Office of the Solicitor acts as legal adviser to the department, conducts its legal work, and represents it in matters requiring legal action.

Library contains about 155,000 books and pamphlets on agriculture and related sciences; it receives 2,700 current periodicals. Primarily for the department, it is free for reference and maintains a system of interlibrary loans.

Office of Farm Management and Farm Economics studies the details of farm practice from a business standpoint with a view to determining the most efficient methods of operation.

Weather Bureau conducts meteorological investigations, issues weather maps, handles all work relating to climate, storm warnings, frost warnings, and the like.

Forest Service administers the national forests and develops use of their resources; directs research work relating to forestry and forest utilization.

Bureau of Animal Industry studies and gives information regarding live stock; conducts meat inspection and animal quarantine work.

Bureau of Plant Industry investigates problems relating to plants and plant industries.

Bureau of Chemistry enforces the food and drugs act; investigates questions of agricultural chemistry.

Bureau of Soils surveys and maps the soils and investigates the fertilizer resources of the United States.

Bureau of Crop Estimates collects crop statistics; gathers and collates general agricultural statistics; issues crop reports and forecasts.

Bureau of Entomology studies insects in their relation to agriculture.

Bureau of Biological Survey studies wild birds and animals, their distribution, habits, and relations to agriculture; administers Federal bird and game reservations and Federal laws protecting game and regulating the importation of birds and animals; controls noxious mammals, and experiments in fur farming.

Bureau of Public Roads studies and supplies information regarding road making, road management, road maintenance, farm irrigation, farm drainage, and rural engineering and architecture.

States Relations Service supervises the use of Federal funds for agricultural experiment stations, and extension work; investigates agricultural education, and food, clothing, and household equipment and management.

Bureau of Markets investigates marketing and distribution of farm products. Conducts market news and food product inspection services. Enforces United States cotton-futures, grain-standards and standard-container acts, and administers the United States warehouse act; also conducts stockyard supervision.

Division of Publications supervises the editing, printing, and distribution of publications and press material, and directs the illustrations, exhibits, motion pictures, and related informational matters.

Federal Horticultural Board assists in the enforcement of the plant quarantine act of August 20 1912.

Insecticide and Fungicide Board assists in the enforcement of the insecticide act of 1910.

If you want help on any problem connected with the work of any of these offices or bureaus, don't hesitate to ask for it. Address the bureau that has to do with your needs, or just address the United States Department of Agriculture, Washington, D. C.

1921

JANUARY							FEBRUARY							MARCH						
S.	M.	T.	W.	T.	F.	S.	S.	M.	T.	W.	T.	F.	S.	S.	M.	T.	W.	T.	F.	S.
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OCTOBER							NOVEMBER							DECEMBER						
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1922

JANUARY							FEBRUARY							MARCH						
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OCTOBER							NOVEMBER							DECEMBER						
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How Uncle Sam serves Agriculture

He Stands Guard He watches over your food to see that it is pure and wholesome; he fights against diseases, insects, rodents, and predatory animals that threaten farm animals and plants; he protects timber supplies from fire and devastation; he maintains standards in farm products and insists upon fair trading.

He Gives Aid He warns against storms, frosts, floods, winds, for the good of mariners, farmers, stockmen, forest guardians; he helps you with the everyday business of the field and the household; he backs your agricultural college and experiment stations with funds and facts; he helps to build your roads. His work is not alone for the men who produce food, raiment, and shelter, but for those who use them.

Let Him Help You Sometimes Uncle Sam may seem too big and too far away; that is a penalty he has to pay for having so many nieces and nephews. He never wishes to be distant, and the more you let him serve you, the more human and personal you permit him to become.

**For his help on farm and home problems, write to
The United States Department of Agriculture**

Washington, D. C.
